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TUMOR OF ABERRANT THYROID, WITH REPORT OF A CASE

BY HORACE BINNEY, M.D., F.A.C.S., BOSTON

TUMORS arising from misplaced thyroid tissue have long been recognized, but owing to the lack of symptoms produced by them in some cases or to their being inoperable in others, they have been chiefly of pathological interest.

Of great clinical interest and importance is the group of median aberrant thyroid tumors known as lingual thyroids and thyro-glossal cysts. The origin of these has been clearly explained by embryologists, among whom there is a general agreement that they arise from the median anlage of the gland, and are the result of some fault in its development. The possibility that the lingual thyroid may become of such size as to require operation makes the question whether it constitutes the whole thyroid gland in the patient concerned, or whether it is an accessory to a normally placed thyroid gland, of great importance. As Mayo and others have emphasized, the removal of a lingual thyroid, without a normal gland being present, means subsequent myxedema. An example of this condition is quoted by Hartley.[1]

Of less common occurrence and of considerable embryological obscurity are the group of so-called lateral aberrant thyroids, also termed lateral accessory thyroids. These have been studied by Schrager,[2] Wohl,[3] and others, and a number of cases reported in the literature. At least six of these were carcinomas. The writer's case, which was a benign papillary adenocystoma, is here reported:

Female, 29 years, married. Entered Boston City Hospital, December 19, 1921.

Chief Complaint: Swelling in neck for three years and difficulty in swallowing for two weeks.

Family History: Father, 52 years old; has gastritis. Mother, 52 years of age, is living and well.

Past History: Measles, chicken-pox, mumps, and typhoid in childhood. Frequent attacks of tonsillitis between the ages of 5 and 10. No scarlet fever, diphtheria, rheumatic fever, or chorea. Married 4½ years. Husband well. Two pregnancies: first, three years ago; child now living and well. Second, miscarriage at three months.

Gynecological: Periods irregular at three to four-week intervals, lasting five days, with moderate flowing. No pain, metrorrhagia, or leucorrhea. Last period December 4; normal.

Cardio-Respiratory: Dyspnea with moderate exertion. No cough.

Gastro-Intestinal: Good appetite. Bowels regular. Never vomits; some belching.

Genito-Urinary: Negative.

Neuromuscular: No headaches, pain in muscles, joints, or bones. Thinks she is "nervous."

Present Illness: Three years ago, after tonsillitis, had large swelling in right side of neck, which subsided in a few weeks, leaving a small lump. Not painful. Ten weeks ago had attack of indigestion with difficulty in "catching her breath." For past few weeks, some difficulty in swallowing food, and in last four weeks, the lump has increased in size.

Physical Examination: Well developed and nourished. No exophthalmos, Von Graefe, or Stellwag. Heart and lungs negative. Extremities: Knee-jerks hyperactive. Arm reflexes active, and slight fine tremor of hands.

Urine: Specific gravity 1.020; amber; acid; no albumin or sugar. Sediment negative.

Local: Firm tumor about one inch in diameter at lower part of external border of right sternomastoid. Movable laterally, but not up and down. Not painful. Small or pea-sized tumor felt just below and somewhat anteriorly. Apparently no connection with thyroid gland. Is not movable with swallowing. No evidence of thyrotoxicosis. Thyroid apparently normal.

December 21, 1921: Operation. Ether. Three-inch transverse incision just above clavicle, centre over outer border of sternomastoid. Muscles retracted inward and mass exposed outside of carotid sheath; thin capsule, blue to gray in color. No definite vessel entering capsule. Shelled out easily; lobulated, firm, and elastic, resembling thyroid tissue. Few small veins tied with catgut, small rubber tissue drain, skin and fascia No. 1 catgut and horsehair. Good recovery.

December 25, 1921: Drain removed after 48 hours. Wound clean. Up in chair on third day.

December 27, 1921: Sutures removed. Wound healed. Discharged to local doctor.

Pathological Report (for which I am indebted to Dr. Mallory): Gross: Two masses of tissue 3 x 2 x 1 and 2 x 2 x 1 cm. respectively, connected by a narrow band of fibrous tissue. Each is soft and dark red and composed of many cysts full of dark reddish-brown fluid.

Microscopic Examination: Shows a tumor of papillary-adenomatous type. Some of the glands are of the size of those in a normal thyroid and contain a homogeneous material resembling colloid. Others are larger up to 4 and 5 millimeters in greatest diameter, contain a thinner secretion, and have in places numerous papillary branching outgrowths from their walls, lined with cuboidal epithelium.

Some of the papillary projections are quite edematous. A few of the gland cavities contain endothelial leucocytes filled with hemosiderin, and similar leucocytes are present here and there in the stroma. There is much infiltration of the walls of the cysts with lymphocytes. No mitotic figures can be found in the epithelial cells.

Diagnosis: Papillary adenocystoma, apparently of thyroid gland origin, showing old hemorrhage and much chronic inflammation. Prognosis is to be regarded as favorable as no mitotic figures could be found.

Embryology: For the sake of clearness in understanding these tumors a brief outline of the development of the thyroid is desirable. Corresponding to the formation of the gill clefts on the external surface of the anterior neck region of the embryo, there are developed on the internal or pharyngeal surface the so-called pharyngeal pouches, five in number. Beneath the ventral aspect of the entoderm, lining the pharyngeal region, close to the ventral end of the first pouch and immediately caudal to the anterior portion of the rudimentary tongue, the median anlage of the thyroid appears. As the head end of the embryo lengthens the thyroid anlage grows away from the pharyngeal cavity, and a tract or stalk is developed between it and the pharyngeal surface, in which a lumen is usually formed. At the pharyngeal end of this tract is a depression known as the foramen cecum, the tract being the thyro-glossal duct. As growth progresses, the thyroid anlage becomes bifurcated, and thus the two lateral masses or lobes are formed. These gradually descend and ultimately occupy the region just below the cricoid cartilage. Meanwhile the thyro-glossal duct loses its lumen, becoming a mere strand of cells which later atrophy, but at certain stages it can be traced from the foramen cecum to the hyoid bone, and in some cases below this point. If thyroid tissue persists along the course of the duct below the hyoid bone, and continues to develop, there is formed a median or pyramidal lobe. If any portion of the duct fails to atrophy but takes on further development, we have a thyro-glossal cyst. Failure to migrate downward on the part of the thyroid anlage will give rise to the abnormality known as lingual thyroid, or if portions of the anlage become detached in its descent, smaller thyroid nodules may develop along its course.

As is well known, the thyro-glossal cysts may give rise to sinuses or fistulae, while the aberrant thyroid remnants may form tumors known as accessory thyroids. These have been found anywhere from beneath the lingual mucosa, the region of the hyoid bone, and the lateral aspects of the neck to the region of the aortic arch, and even have given rise to tumors in the pleural cavity.

As to the precise origin of the lateral aberrant thyroid there has been some disagreement among embryologists. Born[4] and others considered that a true lateral anlage was formed on each side from the fifth branchial pouch (the so-called ultimo-branchial body) which later fused with the lateral portion of the median anlage and contributed to its growth.

Norris[5] describes these cell-groups as "compact masses of deeply staining epithelium on the dorso-lateral aspect of each lateral lobe," but he is uncertain as to whether they are later transformed into thyroid tissue, or atrophy. The close relation of these ultimo-branchial bodies with the lateral divisions of the median anlage have led others to consider that they represent true lateral anlagen, and it is tempting to thus explain the existence of the lateral aberrant thyroids or tumors. According to Keibel and Mall,[6] however, more recent investigators have found evidence that these bodies later become atrophied and thus are not true thyroid anlagen. They state, "In man, no cell formation that can be referred to the ultimo-branchial bodies are to be distinguished after a time. Their transformation into thyroid tissue is highly improbable. The name 'lateral thyroid anlage,' which has been applied to the ultimo-branchial body, is therefore to be rejected."

There is also clinical evidence that the thyroid is derived from a single anlage. As pointed out by Hartley,[1] removal of a lingual thyroid has been followed by myxedema, showing that no other thyroid tissue was present. If there were lateral anlagen it is reasonable to suppose that these would have developed into thyroid tissue, which would prevent the occurrence of myxedema.

After a study of the embryological evidence, Wohl[3] concluded that, "At present the most plausible explanation for the occurrence of lateral aberrant thyroids is that islands of cells become detached from the lateral portion of the median anlage and remain dormant until later in life, when, for some reason, they commence to grow and initiate pathological processes." This seems the most reasonable view to take at the present time. The subject, however, admits further embryological investigation.

Occurrence: In 1906 Schrager[2] published a study of all the cases found in the literature for the 50 years previous, amounting to only 16 in number. Since that date, individual cases have been reported by Cushway,[7] Poole,[8] Martin,[9] Gerster,[10] Wohl,[3] Hopkins,[11] Peyron,[12] and Greensfelder and Bettman,[13] making 24 cases, and with the case here reported, a total of 25 cases, covering a period of about 70 years. They are, therefore, of considerably greater rarity than the superior or lingual thyroids, of which J. B. Murphy in 1905 collected and reported 39 cases.

That the reports in literature do not represent the true proportion of lateral aberrant thyroids is probably true, due, as Schrager suggests, to the fact that many of them do not come to operation, or if operated upon in smaller hospitals no pathological examination has been made and the tumor has been considered to be an enlarged lymph gland.

Of the lateral thyroids giving rise to tumor formation, 15 were benign and 10 malignant.

Schrager discussed the subject fully, and it is unnecessary to repeat more than will serve to emphasize certain points.

Etiology: Eighty-eight per cent. of aberrant thyroids occur in women, and most commonly between 12 and 35 years. All the cases reported since Schrager's publication were in women, and the ages ranged from 19 to 60. In the latter (Gerster's case) the tumor was inoperable and doubtless had existed for many years.

Location: The tumors are usually situated in the anterior triangles of the neck, rarely in the posterior. Gerster's case was in the posterior triangle just above the clavicle.

Pathology: Schrager describes them as being encapsulated, red and greenish in color. Their general appearance is like that of normal thyroid in the benign cases. They may be isolated or occur in a chain of nodules connected by strands of thyroid tissue, or of connective tissue containing glandular particles. More or less cystic formation is common.

The microscopic appearance is usually that of normal thyroid tissue, although a number of reported cases were of colloid goitre type.

In the malignant cases, the tissue resembled adeno-carcinoma of the thyroid. These cases, like carcinoma of the thyroid gland proper, show a tendency to form bone metastasis.

In one of Schrager's cases, a woman of 64 years, there was a carcinomatous right lobe of the thyroid proper and outside of it another movable tumor beneath the sterno-mastoid muscle. The carcinomatous lobe was removed and the patient did well for three days, but died on the fifth day with a temperature of 105, the cause of death being undetermined. The outer tumor was removed post mortem and proved to be of normal thyroid tissue. Schrager believes this to be an example of compensatory hypertrophy.

Diagnosis: There being no constant characteristic features distinguishing an aberrant thyroid tumor from the usual tumor due to enlarged tubercular glands or lymphadenomas of other origin, the diagnosis is exceedingly difficult, and in none of the reported cases was the diagnosis made before operation. The possibility of removing an aberrant lateral thyroid in the absence of a normal gland, while evidently much less frequent than in the case of lingual thyroids, is enough to make the operator uneasy at least.

The presence of a normal gland should, therefore, be determined in every case where one of these tumors is exposed. If absent, the removal of the growth should be incomplete unless malignancy is suspected.

Schrager gives the following diagnostic helps:

1. The tumor is likely to increase in size at puberty.
2. It tends to fluctuate in size during menstruation.
3. It tends to become cystic.
4. It is usually unilateral; if solid, not greater in size than a mandarin orange.
5. It is of slow growth, smooth, and if not cystic, of soft consistency.

Marked fluctuation in size in a tumor in this situation should make one suspicious of an aberrant thyroid.

In a suspected case, Schrager advises the administration of thyroid extract for a time. If this produces shrinkage in the tumor, operation is to be avoided if possible.

Treatment: In the presence of a normal gland, an aberrant thyroid tumor of sufficient size to cause symptoms is properly removable by operation. It is well to bear in mind that in some cases the tumors are quite vascular and that hemorrhage, as well as adhesions to surrounding structures, may be troublesome. If cystic, and the cyst ruptures, since the contents are very toxic, it is advisable to use drainage.

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DISCUSSION

Dr. Alfred M. Rowley, Hartford: I am glad that Dr. Binney has put this case on record. Anything that I may say in discussion will, of necessity, be from academic grounds, because I have never seen a true case of lateral aberrant thyroid. I have seen several cases where the attachment to the lateral lobe of the gland was very small, but I have never seen one entirely detached.

I think all of us have seen abnormalities in the development and descent of the thyroid from the tongue anlage or bud, such as the lingual thyroid, the patent or partly open thyroid duct, and the drawn-out mesial or pyramidal lobe.

In this case it is a question of the correctness of embryological observations. Whether the older embryologists, who taught us that the origin of the lateral thyroid was from the fourth branchial cleft, and was later joined to the body of the gland, are right or wrong. Was the tumor that Dr. Binney reports caused by non-fusion, or was it extruded or broken off from the lateral body?

The later embryologists believe that the whole gland is formed from the median bud, and if any tissue is formed from the branchial groove it is not permanent. To me it is far easier to visualize non-fusion than complete extrusion.

In the light of this case it is interesting to speculate if detached lateral tissue may not more often be present than is found or suspected, atrophied tissue having a different blood and nerve supply than the body of the gland.

So to my mind this is an academic question involving the origin of the lateral thyroid lobe.

Dr. F. H. Lahey, Boston: The clinical division of accessory thyroids is interesting. We have an opportunity to see a great many so-called allied accessory thyroids, which are not true accessory thyroids.

A true accessory thyroid is an area of thyroid tissue in no way connected with the thyroid, even by a fibrous band.

A pseudo-accessory thyroid is an area of thyroid tissue separated from the gland by some distance, but connected with it by a narrow isthmus of thyroid tissue.

An allied accessory thyroid is an area of thyroid tissue separate from the true thyroid but joined to it by fibrous bands. This type is an adenoma which has become extended from the thyroid, and the fibrous band which connects it to the thyroid is the stretched-out fibrous capsule of the adenoma.

As to location, the true accessory thyroids are located anywhere in the median line from the foramen cecum to the thyroid, and laterally just outside the external borders of the sterno-cleido-mastoid. They occur not infrequently in the middle line in a rosary-like chain of small accessory thyroids running from the isthmus to the thyroid bone. Furthermore, there have been cases in which thyroid tissue has been found in the hyoid bone. This is of interest as indicating that the remaining thyroid tract may be included in the body of the hyoid. We have once had to split the hyoid in following a thyro-glossal cyst through its body. It is well to remember in dealing with thyro-glossal tracts that they may run behind, through, or in front of the hyoid.

When remnants of the thyroid persist at the foramen cecum they are then called lingual thyroid, when within the substance of the tongue intra-lingual thyroid, and when below the tongue sub-lingual thyroids.

We have recently reported a case of lingual thyroid in which no other thyroid existed than that at the base of the tongue, producing obstruction to swallowing and demanding removal.

Endo-laryngeal thyroids have been reported and are usually located within the trachea at the point where the larynx and trachea join.

Pseudo-accessory thyroids in our experience have most commonly arisen from the post-surface of the gland or from the inferior pole and have become post-tracheal or intra-thoracic in its location.

We have seen allied accessory thyroids most commonly just outside the sterno-mastoid, an adenoma having slipped under that muscle and pulled away from the thyroid except for its fibrous connecting bands. We have also frequently encountered allied accessory thyroids in the superior mediastinum, an adenoma having been caught in the chest and pulled away from the true thyroid to become intrathoracic in situation.

In dealing with all thyroid tissue distant from the true thyroid one must have in mind the possibility of its being metastatic malignant thyroid adenoma.

Dr. Charles A. Porter, Boston: I have had two cases where I have had to resect the hyoid bone for thyro-glossal cyst.

Dr. Horace Binney, Boston (closing): I was very much interested in the discussions of Dr. Rowley and Dr. Lahey. They brought out practical points which I had not come across. In connection with my case and the question of movability—I don't recall having tested it for vertical movability, but at operation, when it was exposed, it was fairly movable. I was unable to see any fibrous band or any direct connection with the thyroid gland. In fact, it was separated by a considerable interval.

It seems that the true accessory thyroid needs more embryological study, and we may learn in time how those things take place.

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A CASE OF VOLVULUS OF THE ENTIRE SMALL INTESTINE

BY JOHN B. WHEELER, M.D., BURLINGTON, VT.

The patient, an eight-year-old girl, was admitted to the Mary Fletcher Hospital, June 8, 1923. She had always had a good deal of trouble with her digestion and had had numerous "vomiting spells." A very violent one came on two days before she entered the hospital; succeeded by severe epigastric pain. The night before her entrance, the pain was so great that her family physician gave her a hypodermic of ¼ grain of morphine and sent her to the hospital next morning.

On admission, temperature was normal, leucocyte count 17,200, polynuclears, 80 per cent. The patient sat up in bed, bending over forward, saying that that position was more comfortable than lying down. Occasionally she would vomit a little mucus, but nothing fecal. There had been no defecation for forty-eight hours. There was great epigastric tenderness and pain, but no tenderness at McBurney's point. Both recti muscles were rigidly contracted, and this spasm and the epigastric pain and tenderness were so severe that satisfactory palpation was impossible, although there was little or no rigidity of the oblique abdominal muscles.

Operation was immediately undertaken, under ether anesthesia. A six-inch incision was made, beginning at the costal border half an inch to the right of the median line and running directly downward. On opening the peritoneum, the small intestine was seen, completely collapsed and of a light purple color. On passing the fingers behind it, a hard cord, half an inch in diameter, could be felt extending several inches downward from the region of the diaphragm. The intestine was lifted out of the abdominal cavity and the condition was found to be a volvulus of the entire small intestine. The cord which had been felt behind it was the mesentery, which had been twisted once and a half from right to left. There was no fluid in the peritoneal cavity and fortunately no adhesions had formed, so that the volvulus was readily untwisted by turning the whole mass of intestine over once and a half, from left to right. The appendix, which was somewhat swollen and congested, was removed and the parietal wound closed.

Convalescence was normal and unusually rapid. The child was discharged from hospital, well, on June 23, fifteen days after operation.

Volvulus is not a common condition. It occurs only in from 2 to 12 per cent. of all cases of intestinal obstruction, according to the estimates of various authors. In addition to the report of this case, I should like to call attention to certain features which render it remarkable, even when compared with other cases of volvulus.

1. *Age of the patient.* She was only eight years old. Volvulus may occur at any age, but as a rule it is a disease of advanced life. In volvulus of the entire small intestine, however, a notable minority of the cases are in young people. Weible[1] gives a list of 67 cases, in 60 of which the age was stated. Ten of these patients were less than ten years of age, and thirteen of them were between twenty and thirty.

2. *Sex of patient*—female. The sex of Weible's cases was stated in 64 instances. Fifty-one were male and thirteen were female.

3. *Location of the volvulus*—the small intestine. According to Brewer[2] more than half the cases of volvulus are at the sigmoid flexure, the next largest number at the cecum, and the fewest in the small intestine. Of these few, only a small proportion involve the whole small intestine.

4. *Absence of abdominal distention.* Vaughan[3] gives a detailed account of twenty-one cases of volvulus of the entire small intestine. In nearly all of these cases, abdominal distention was a prominent symptom. In the case just reported, the small intestine was completely collapsed.

5. *Rigidity of recti with relaxation of oblique muscles.* In Vaughan's list, the rigidity, when mentioned, was uniform and was associated with distention.

6. *The patient's posture,*—sitting up in bed, bent forward, knees drawn up. I never saw a patient with such serious abdominal trouble, maintain this posture. Of course, in general peritonitis the knees are drawn up, but the patient lies on the back or side.

7. *The successful outcome of the case.* Wise[4] in 1920 gives figures which show the recovery rate of all cases of volvulus of the entire small intestine, reported up to that date, to be about 33 per cent. The result in my case is attributable to my good fortune in being able to operate before the onset of peritonitis and before the strangulation caused by the volvulus had lasted long enough to impair the vitality of the intestine.

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DISCUSSION

Dr. Edward P. Richardson, Boston: I have been much interested by this most unusual case of Dr. Wheeler's and the splendid result obtained by him. Needless to say, I have seen nothing like this in my personal experience. At the Massachusetts General Hospital in a period of twenty years there were 239 cases of intestinal obstruction, exclusive of strangulated hernia and malignant obstruction. Of these, 25 were volvulus. In most instances the large intestine was affected. Volvulus of the cecum and ascending colon occurred eight times, and of the sigmoid six times. In one case the region was not specified. Ten cases were diagnosed as volvulus of the small intestine. In these, as a rule, only a limited part of the intestine was involved, and there was usually some fixed point, such as a band or adhesions, around which the intestine could rotate. In one case of Dr. C. A. Porter's, only, there was a volvulus of the small intestine. A man of 43 came in 36 hours after being struck by a board from a circular saw. Immediately following the injury, an irreducible mass developed in the groin. He was operated upon for strangulated hernia. The hernia was resected through an abdominal incision, and no mention was made of any abnormality in the small intestine. After operation he continued to vomit, and distention developed. He was operated on 48 hours later by Dr. C. A. Porter, who had seen the case in consultation. At this operation a complete volvulus of the small intestine was found, together with a diffuse peritonitis from leakage at the anastomosis. Dr. Porter untwisted the volvulus and put tubes in the ends of the small intestine at the point of resection. The patient's condition was desperate at the time of operation, and death occurred three days later. The autopsy interested me particularly. It is conceivable that if you have a small intestine with a long mesentery and a short attachment along the spinal column, it is easier for it to rotate as a whole than under the normal arrangement. No abnormality in arrangement of the gastro-intestinal tract was noted. There was a band which crossed the ileum six inches from the ileocecal valve. Whether or not that served as a point of fixation, which favored in some way rotation of the intestine, cannot be stated because the condition was relieved at the time of autopsy.

Dr. Herbert L. Smith, Nashua: I would like to put on record a case of volvulus which, while it was not in the small intestine, yet was interesting and unusual. A man of about forty years had had a number of attacks of acute abdominal pain accompanied with vomiting and prostration, from which he had recovered without operation. He was at his home in the country, forty miles from a hospital, and had to be operated upon at once. He had all the symptoms of obstruction, with a tense, distended and tender abdomen. As soon as the peritoneum was opened, coil after coil of intestine as large as one's upper arm came rolling out of the abdominal cavity and formed themselves into a complete circle exactly like an inflated inner tube, lying across the patient's abdomen. It proved to be an enormously lengthened and distended sigmoid. A tape measure stretched over the tube showed it to be 36 inches in diameter. The volvulus was then unwound and it was found that the coil had been twisted two and one-half times.

On the mesentery and portions of the bowel near the point of rotation there were thickened, hard, glistening patches, the results of his previous attacks. The sigmoid was resected, followed by an end-to-end suture. I did not see him again, but his physician reported that after two or three days the abdomen became greatly distended, beginning especially at the upper portion, and the patient died with what was supposed to be general peritonitis. From the description given me, it seemed very likely that it was a case of acute dilatation of the stomach.

I had the sigmoid blown up with air and dried, and kept it for some years to show to visiting physicians. One would never have believed that it could have been contained in a human abdomen. As a matter of fact, I suppose before it was relieved it was only potentially distended. While confined in the abdominal cavity it was under pressure from without, but as soon as it was free we could see it rapidly distend before our very eyes, exactly like a rubber inner tube when being pumped full of air. It certainly was a most amazing spectacle. We have all seen coils of greatly distended bowel associated with many kinds of obstruction, but no one who did not see it in person would be able to picture to himself the tremendous force with which this coil was literally blown out of the abdomen. It almost seemed like a thing of life, and gave every one who observed it a nervous thrill. To me, at least, it recalled the wicked Djinn of the Arabian tale, when released from the bottle by the terrified fisherman.

Dr. R. C. Cochrane, Boston: I would like to report a case operated upon at the City Hospital by Dr. Somers Fraser,—a case of volvulus of the stomach. I think there recently was a case reported by Torek of volvulus of the stomach. This case was an ex-soldier who had been in hospitals and had a diagnosis made by x-ray of diaphragmatic hernia. He came into the City Hospital showing all the symptoms of acute perforation of the stomach, and Dr. Fraser operated; and when the upper abdomen was opened the first thing that presented was a huge, dark-colored tumor, the character of which could not be made out. After some difficulty he finally delivered this tumor and found it was stomach which had been twisted upon itself two or three times. At first that seems impossible, but I think the condition which made it possible was a long gastrohepatic omentum. The lower portion of the tumor, after it was replaced in the abdomen, recovered its color and looked fairly normal in a short time, but the cardiac end of the stomach didn't regain its proper tone; it was indurated and discolored, and the problem was what to do. Dr. Fraser did a gastrostomy and closed the abdomen, as there was nothing in the way of resection to be done. There was no diaphragmatic hernia present. The patient did well for four or five days and then I saw him in consultation, and at that time he seemed to be all right; the abdomen was perfectly soft and there was no evidence of peritonitis, but two or three days later the patient died from what seemed to be an embolus. The case was so unusual I thought it worth reporting.

Dr. David Cheever, Boston: I would like to record one observation which has some bearing on the point that Dr. Richardson brought out, and that is in relation to developmental anomalies of the small intestine and volvulus. I haven't seen the condition in the living, described by Dr. Wheeler, but in the dissecting-room I have seen two cases of entire failure of migration and rotation of the intestinal tract,—one instance on the operating-table without any incidental disease, the stomach normally placed, the duodenum normal, and then the small and large intestines, thus showing (drawing diagram) an abortive transverse colon and splenic flexure. Whether it was due, as Dr. Wheeler suggests, to the failure of these normal points of fixation where the duodenum ends, I do not know; but unless there is something like a Meckel's diverticulum, something fixed to the abdominal wall for the coils to get around, it is pretty hard to get a volvulus.

In one dissecting-room subject there was no fixation and a long mesentery. This patient had a complete volvulus of the whole intestine, including the large intestine. Whether the patient died from that I don't know, as post-mortem changes were too far advanced to determine. The mesenteric arteries were injected, which seems to show there was no strangulation of the intestines. I could get no information from the place from which the subject came, which was one of the insane asylums of the western part of the State.

Dr. John B. Wheeler, Burlington, Vt. (closing): There isn't much to be said. I am glad to have heard the reports of cases. With regard to the matter of the long mesentery—I saw statements in the literature to the effect that while it is at times the cause of volvulus, still there is quite a proportion of cases in which observation had been made in regard to the length of the mesentery which showed no abnormal length, and some other explanation had to be devised.

Original Article

HYPERTHYROIDISM MASKED AS HEART DISEASE

BY SAMUEL A. LEVINE, M.D., BOSTON
AND
CYRUS C. STURGIS, M.D., BOSTON

[From the Medical Clinic of the Peter Bent Brigham Hospital, Boston.]

Since the earliest classical descriptions of exophthalmic goiter it has been repeatedly emphasized that a certain amount of cardiac damage is often associated with this condition. It is also realized that the delay of a cure in this disease may result in serious and permanent damage to the heart. The manifestations of cardiac involvement in these patients vary greatly in intensity as indicated by the symptoms which are presented, as they may range from complaints of mild dyspnoea and palpitation to the complete picture of cardiac ~~decompensation~~. These cardiac features may vary in another sense, *i.e.*, whereas ordinarily they follow in point of time the other developments of hyperthyroidism, in some cases they may come first and in fact be the only ones present for several years. We have recently observed several patients in whom the cardiac condition was so prominent that the diagnosis of hyperthyroidism, which was the underlying cause of their heart condition, was overlooked for a considerable period of time. While the evidence of hyperthyroidism in these patients was at first apparently obscure, as they lacked the classical changes in the eyes and changes in the size of the gland, yet careful observation, repeated basal metabolism studies, the course of the disease, histologic examination of the gland in two instances and certain other diagnostic features which are to be considered later, proved conclusively that the diagnosis of hyperthyroidism was correct. In each instance these patients were regarded as having some form of heart disease and were treated accordingly for a period varying from several months to several years. Had their true condition been recognized at the onset of the disease, measures for their relief might have been instituted much sooner.

Two of the most striking signs of hyperthyroidism are exophthalmos (often associated with other abnormalities such as lid-lag) and an enlarged thyroid gland. In each of the five patients which are the subjects of this report there were no characteristic eye signs. The thyroid gland was not definitely palpable in four of the patients, and in the fifth the gland was slightly enlarged and somewhat nodular, although this enlargement was so slight that it had been overlooked for two years by several physicians. The third classical sign, tachycardia, is equally characteristic of heart disease and hyperthyroidism and is, therefore, of no great assistance in the differential diagnosis between the two conditions. In the absence of these more conspicuous signs, the diagnosis of hyperthyroidism is often difficult and must depend upon other findings such as the characteristic nervous demeanor of the patient, tremor of the extended fingers, increased warmth of the skin, the history of loss of weight despite a normal appetite, basal metabolism studies, and occasional transient glycosuria. An additional phenomenon which we have noted in these patients is the presence of *paroxysmal auricular fibrillation* which occurred in all five of the patients herein reported and is a condition which, although certainly not pathognomonic of hyperthyroidism, we believe occurs with sufficient frequency to suggest that diagnosis when it is observed.

CASE HISTORIES

Case 1. A. S., Medical No. 21,243, age 38, was first admitted on March 2, 1920, complaining of "pain over the heart and stomach."

Family History. Negative.

Past History. She had been married for nineteen years and had seven children living and well. There was no history of acute rheumatic fever, chorea, or any of the acute infections including acute tonsillitis.

Present Illness. In 1918, following a uterine curettage, the patient developed pain in the chest, palpitation and dyspnoea which continued for a period of several months. Subsequent to this the patient gave birth to her seventh child at term. During this pregnancy she had enjoyed good health with but slight limitation of her activities. In 1920 the palpitation and dyspnoea again began to trouble her and both symptoms were induced by slight exertion or appeared spontaneously at night when she was in bed. The dyspnoea became so marked that it was sometimes necessary for her to get out of bed and sit in a chair near an open window. About five weeks before coming to the hospital she observed slight swelling of the ankles for the first time, and pain in the pit of her stomach not associated with food. For several months she had complained of a cough and had raised a small amount of sputum.

Physical Examination. The patient was fairly well developed but showed evidences of the recent loss of a moderate amount of weight. The skin was warm, soft and moist. The face and lips were moderately cyanotic. There was no enlargement of the thyroid gland, no exophthalmos or lid-lag. The heart seemed to be enlarged to percussion but on x-ray examination proved to be normal in size. There was a slight but distinct presystolic thrill at the apex and a soft systolic murmur accompanying the first sound. The first sound was of a sharp snapping character.

Subsequent Course. The diagnosis on admission was mitral stenosis and insufficiency. The patient remained in the hospital for a period of seventy-seven days and during this time her pulse continued high, averaging about 100 per minute. The heart showed alternating periods of fibrillation and regular rhythm which were confirmed by electrocardiographic tracings. There was no therapeutic response to digitalis as the drug produced nausea and vomiting without evidence of a diuresis or a slowing of the heart rate. After the patient had remained in the hospital a number of weeks her condition improved greatly. She became brighter and more active. When she had been in bed 18 days her metabolism was determined and found to be 39 per cent. above the average normal. Two months later she was discharged much improved. She was admitted a second time to the Peter Bent Brigham Hospital on May 24, 1923, approximately three years after her first discharge. During this time she had felt very well until two months before her second admission, when all of her old symptoms recurred. Physical examination on this admission was essentially the same as before. The patient on this admission had permanent auricular fibrillation. The thyroid gland was not palpable at this time but there was a systolic bruit and a thrill over the left inferior thyroid artery. The basal metabolism on June 4, 1923, was 53 per cent., and on June 11, 1923, 47 per cent. above the average normal. Thyroidectomy was advised but the patient refused operation and she was discharged to her home unimproved. A few months later, after reconsideration, a preliminary ligation was performed.

CASE 2. M. G. M., Medical No. 17,966, age 54, was admitted on February 27, 1922, complaining of heart disease and diabetes.

Family History was irrelevant.

Past History. The patient had always been strong and healthy and did not recall having had any illnesses of importance.

Present Illness. Three years ago she had a mild attack of influenza and had not felt up to her usual standard of health since, although she had no specific complaints. About two and a half months before admission she developed moderate dyspnoea on exertion and a slight non-productive cough. About this time she observed that her appetite was unusually large although she had lost 20 pounds in body weight during the preceding six months. Six weeks before admission she suddenly developed nausea and vomiting and cardiac palpitation. She felt very weak and the following day consulted a physician who told her that she had diabetes and heart trouble. She was given a diabetic diet and digitalis. Her condition gradually became worse and she became so dyspnoeic that she could hardly get around and was obliged to use three pillows at night. She noticed also that her legs were swollen for the first time a few days before admission.

Physical Examination showed evidences of a recent loss of a considerable amount of weight. She was exceedingly nervous and easily startled. There was no thyroid enlargement, exophthalmos, or other eye signs. A fine tremor of the fingers was present. Examination of the heart showed the left border to be 12.5 c.m. from the mid-sternal line while the right border was apparently at the sternal margin. There was a loud, blowing, systolic murmur heard all over the precordium. The heart was grossly irregular. The examination of the urine showed a small amount of sugar and albumen. The fasting blood sugar was found to be 0.18 per cent.

Diagnosis. The diagnosis on admission was diabetes mellitus and chronic myocarditis.

The diabetic condition was readily controlled and the patient was finally able to consume and utilize a diet of 3000 calories. The rhythm of the heart, which was irregular on admission, quickly became regular and then there were frequent repetitions of this irregularity which the electrocardiogram showed to be paroxysmal auricular fibrillation. After the patient had been in the hospital for a month, although the presenting complaint during this time was nausea and vomiting, the attack of unexplained transient fibrillation brought up the possibility of hyperthyroidism and so a metabolism test was made and proved to be 38 per cent. above the average normal. Following a series of ten roentgen-ray treatments over the thyroid gland the patient's metabolism fell to 6 per cent. below the average normal and up to the present time she had made a complete recovery.

CASE 3. H. C., Medical No. 13.332, was admitted to the hospital on April 10, 1920, complaining of "shortness of breath."

Family History. Negative.

Past History. Negative.

Present Illness. The patient stated that she had been short of breath on exertion for years but within the past two years this had become much more marked. Recently she was dyspnoeic, even when sitting quietly, and was troubled greatly on account of nocturnal dyspnoea. For the past five years she has had a troublesome cough which was accompanied by the expectoration of a moderate amount of thick tenacious sputum. Her appetite was good but one year ago following the death of her husband, and an attack of acute tonsillitis, she lost fifteen pounds which she did not regain.

Physical Examination showed the patient to be orthopnoeic and suffering considerably from respiratory distress. There was no lid-lag or exophthalmos. A fine tremor of the extended fingers was present. There was a questionable enlargement of the thyroid gland although there were no signs of increased vascularity. Examination of the heart showed the rhythm to be absolutely irregular with a radial rate of 120 per minute. The left border of cardiac dulness was 12 c.m. and the right border 4 c.m. from the mid-sternal line, but roentgenograms showed no enlargement. The apex beat was forceful and tapping and there was a suggestion of a thrill over the lower part of the precordium. The patient on admission was regarded as suffering from advanced cardiac decompensation due to chronic myocarditis. A very slight and transient improvement followed the administration of therapeutic doses of digitalis and bleeding 400 c.c. Fifteen days after admission the pulse became regular for the first time. The absence of a definite therapeutic response to digitalis and the paroxysmal auricular fibrillation suggested the possibility of hyperthyroidism as indicated in the ante-mortem notes, but the seriousness of the patient's condition contraindicated a confirmation of this by a determination of the basal metabolism. The patient's condition, which was very serious on admission, gradually became worse and she died on the seventeenth day in the hospital. Post-mortem examination showed the heart to be normal in size (weight 250 gm.), but microscopically there was evidence of acute necrosis of the heart muscle fibers. The heart valves were normal. The thyroid gland was normal in size but microscopic examination showed an intense hyperplasia. There was lymphoid hyperplasia of the spleen and the intestines. The anatomical diagnosis was hyperthyroidism, acute myocardial necrosis, chronic fibrous pleuritis.

Case 4. A. U. was seen in consultation outside of the hospital by Dr. Levine on March 28, 1922. The patient was a woman, age 63, who complained of "pounding of the heart." She had been known to have had tachycardia for several years and associated with this were many "nervous spells." Over a long period it had been recognized that her heart was enlarged and that she had a systolic murmur at the apex. The systolic blood pressure was elevated, varying from 160 to 200 m.m., for several years. Moist râles had been present at the right base for a considerable period of time. When the patient was first seen by Dr. Levine the pulse was regular but previous to this she had had several paroxysmal attacks of auricular fibrillation at which times she was seen by competent observers. Recently the patient had developed edema of the legs but this disappeared with partial rest in bed. She had lost considerable weight. Her condition had slowly become worse as indicated by an increase in her symptoms of cardiac failure. She had recently had difficulty in sleeping at night, due to restlessness, although she was not troubled with nocturnal dyspnoea.

Physical examination showed a well developed and active looking woman. She had a slight staring expression about the eyes although there was no exophthalmos or lid-lag. The skin was warm and flushed. There was a distinct fine tremor of the fingers. The thyroid gland was slightly enlarged and somewhat nodular. The heart was moderately enlarged and there was a systolic murmur at the apex and the base. The heart sounds were both moderately accentuated. The blood pressure was 228 systolic and 100 diastolic. For a period of several years this patient was regarded as suffering from chronic myocarditis and hypertension because of the outstanding cardiac symptoms. The transient fibrillation served to direct attention to a possible hyperthyroidism as the underlying cause. The basal metabolism was found to be 70 per cent. above the average normal.

The patient was seen again about six months later after she had received four roentgen-ray treatments. Her basal metabolism had fallen to 45 per cent. above the average normal but her general condition had not improved as much as her metabolism would indicate. The patient at this time had persistent auricular fibrillation. After a rest in bed of one month with no definite improvement, a double ligation was done under gas-oxygen at the Deaconess Hospital by Dr. Frank H. Lahey on March 8, 1923. There was no severe reaction to the operation and the patient left the hospital 12 days later feeling much improved. Her blood pressure had fallen to 160 systolic and 80 diastolic, and her apex and radial rate were both 76 per minute. She continued to feel much improved and better than she had for the previous two years. On May 11, 1923, a partial thyroidectomy was performed by Dr. Lahey at the Deaconess Hospital. The patient recovered from the operation satisfactorily and left the hospital 12 days later. Blood pressure at this time was 190 systolic and 100 diastolic; heart rate was 72 per minute at the apex. The pathological report on the thyroid gland was multiple colloid adenomatous goiter. On June 1, 1923, the blood pressure was 160 systolic and 90 diastolic, apex rate 75, and radial rate 72 per minute; the rhythm was still grossly irregular.

Case 5. T. O., Medical No. 18,932, female, age 44, was admitted to the hospital on June 28, 1922, complaining of "shortness of breath and heaviness of the feet."

Family History negative.

Past History. She had "rheumatism" in the arms 18 years before but no acute involvement of the joints. An appendectomy was done five years previously. She had a great deal of dental work done but her teeth have given her no trouble recently. There was no history of tonsillitis or other infections.

Present Illness. The onset was two years before admission, when the patient experienced dyspnoea on exertion. About six months later she noticed edema of the ankles, also at this time the dyspnoea became so marked that she was hardly able to get about and this gradually increased in severity up until the time of admission. She was troubled with diarrhoea for two months. She has always been of an anxious, restless, nervous disposition and had recently been greatly upset by difficulties with her husband. She lost 13 pounds in the past four years but during this time her appetite was very good.

Physical Examination showed a well developed and nourished woman who was restless, anxious, and irritable. Her face was somewhat cyanotic. There was no exophthalmos or lid-lag, and the thyroid gland was not enlarged but there was a fine tremor of the fingers. The heart was enlarged to the left to 11 cm. from the mid-sternal line but there was no enlargement to the right. The heart sounds were loud and distinct and very irregular. In the region of the apex of the heart a rough, blowing, systolic murmur was heard. Considerable edema of the legs was present. The diagnosis on admission was chronic myocarditis and auricular fibrillation.

Course in the Hospital. The day after admission the heart became regular and remained so most of the time with interruptions of transient auricular fibrillation as shown by electrocardiogram. Careful re-examination of this patient with the possibility of hyperthyroidism in mind revealed nothing additional except a questionable slight bilateral enlargement of the thyroid gland. After she had been in the hospital for three weeks a basal metabolism determination was done and the metabolism was found to be 69 per cent. above the average normal. A few days later a second determination was found to be 55 per cent. above the average normal. Following a series of four roentgen-ray treatments the metabolism fell to 27 per cent. above the average normal and the patient felt greatly improved. At this time she disappeared from observation and it has not been possible to ascertain her present condition.

A consideration of the important features of the case histories of the five patients shows that all were females between the ages of 38 and 63 years, and that their chief complaint on admission to the hospital was referred to a disturbance of the heart, usually palpitation, pain, or dyspnoea. The duration of their symptoms in each instance had been over two years and their condition had been regarded entirely as the result of a cardiac disturbance, either chronic myocarditis or mitral stenosis.

There are instances in which the differential diagnosis between hyperthyroidism and mitral stenosis is very difficult. Both may have a snapping first heart sound and auricular fibrillation. A thrill may be felt at the apex which often is difficult to time accurately in the heart cycle, and a systolic murmur is often present in both conditions. On admission to the hospital the presence of hyperthyroidism in this group of patients had escaped notice for a considerable interval of time. Each patient showed an enlarged heart, often with a systolic murmur, and in two patients there was a thrill at the apex interpreted as being presystolic in time associated with a loud snapping first sound which led to an incorrect diagnosis of mitral stenosis. The most striking signs of hyperthyroidism, exophthalmos and an enlarged thyroid gland, were not detected on the first examinations, and later when the diagnosis of hyperthyroidism had been firmly established and special attention was directed to the eyes and the thyroid gland, it still remained very doubtful as to whether any abnormalities existed, which illustrates exceedingly well how inconspicuous these changes were.

The true clinical diagnosis was suggested in each instance by transient attacks of auricular fibrillation or delirium cordis, generally lasting several hours. The heart would suddenly become rapid and absolutely irregular and there would develop an appreciable pulse deficit, *i.e.*, the rate at the wrist would be less than that at the apex. This arrhythmia was confirmed by electrocardiogram in four instances and in the fifth case competent observers had noted the transient irregularity at various times. This we have learned to interpret as possibly indicating latent hyperthyroidism. It must be added that generally there were other features that, when viewed retrospectively, fitted in well with the diagnosis. Of particular note was the behavior of these patients, which was characterized by overactivity, alertness, and an animated facial expression which was often associated with a flushed face and moist eyes. Their energetic manner is in marked contrast to the apathetic appearance of patients suffering from other forms of heart disease. A fine tremor of the extended fingers was present in all of the patients. They all gave a history of a recent loss in body weight, varying from 13 to 20 pounds, despite a good appetite.

The presence of transient auricular fibrillation in a patient cannot be regarded as absolute evidence of hyperthyroidism but inasmuch as this is one of the conditions in which it is very frequently observed, its occurrence should suggest the *possibility* of the syndrome and further studies should be made either to eliminate or to confirm the diagnosis. Repeated basal metabolism studies gave the greatest possible assistance in confirming the diagnosis in four of these patients, but the fifth was so ill that the test was considered inadvisable. These four all had determinations which showed the metabolism to be 38 to 70 per cent. above the average normal. We are confident that the tests were technically correct and they were repeated a sufficient number of times to be accurate beyond question. In patients with hyperthyroidism, yet lacking the conspicuous signs of this disease, such tests are of the greatest value in establishing the diagnosis. A word of caution should be written, however, concerning the interpretation of metabolism studies in patients with heart disease. Peabody *et al.*[1] have found that with heart failure there may be an elevated metabolism depending chiefly upon the degree of dyspnoea. This rarely exceeds an increase of twenty per cent. above the average normal and, therefore, does not ordinarily interfere with the interpretation of results in hyperthyroidism as the metabolism in this disease is usually elevated to a much higher level.

RESULTS OF TREATMENT WITH ROENTGEN RAYS AND SURGERY

Three patients were treated by exposure to the Roentgen rays. One patient (M. G. M.) received 10 treatments extending over a period of seven and a half months. Coincident with this, her metabolism fell to 6 per cent. below the average normal and she made at least a complete temporary recovery. A second patient (T.O.) was given four treatments which were followed by a fall in metabolism from 69 to 27 per cent. above the average normal, and there was a simultaneous improvement in her condition. Further treatments could not be given as she disappeared from observations. In a third patient (A. U.) the metabolism fell from 70 to 50 per cent. above the average normal, but there was slight if any improvement subjectively or objectively. Later this patient was operated upon at the Deaconess Hospital by Dr. Frank H. Lahey, and a bilateral ligation of both superior thyroid arteries was performed which was followed by a subtotal thyroidectomy. Following this there was marked improvement and a fall in the basal metabolism to 22 per cent. above the average normal. A fourth patient (A. S.) showed some improvement following a rest in bed of three months and was able to return home and do her own housework for a period of two years. Her metabolism on the first admission was 39 per cent. above average normal, but on a second admission, about three years later, her symptoms had become more marked and the basal metabolism had increased to 47 per cent. Thyroidectomy was advised and refused, and the patient returned home untreated but is now undergoing surgical treatment. The fifth patient entered the hospital in a serious condition and died 17 days later. Necropsy showed a thyroid gland which was normal in size but was diffusely hyperplastic. There was only a small amount of colloid remaining in an occasional follicle, and the acinal cells were highly cuboidal. This illustrates a most important point in relation to the thyroid gland and myocarditis, for a patient may die of heart failure due to hyperthyroidism and yet at no time show hypertrophy of that gland in physical examination; but this small gland, when viewed microscopically, may show evidence of extreme hyperactivity.

The importance of recognizing that this type of chronic myocarditis with heart failure, which has hyperthyroidism as its underlying cause, cannot be over-estimated. The ordinary measures which are commonly employed in the treatment of heart disease, such as digitalis, rest in bed, and limiting of fluid intake, may be of some help, but are insufficient in these patients as long as the real cause of the cardiac damage continues to act. On the other hand, therapy directed toward the thyroid gland offers the possibility of relief which is unequalled in other forms of heart failure. It seems worth while to first try the procedure in which there is some promise of cure and yet slight, if any, risk. On this basis exposure to the Roentgen ray was tried first on three of our patients, with excellent results in one instance, but failure in the remaining two. Subsequently, in one of these patients a marked improvement was obtained by surgery. Quite recently Lugol solution has been used in treating hyperthyroidism and may offer some benefit. As many patients with exophthalmic goiter and serious cardiac failure have been operated upon with excellent results, it is rational to strongly advise surgery as a means of relief if the other procedures have not produced an improvement.

SUMMARY

A group of five patients has been observed who presented a picture of heart disease and were previously treated as such for about a year or two. The occurrence of transient auricular fibrillation first directed our attention to hyperthyroidism as the underlying cause of the symptoms, although exophthalmos or appreciable thyroid enlargement was absent in all of them. The subsequent course of the disease in each patient confirmed the diagnosis of hyperthyroidism. It must be borne in mind that transient auricular fibrillation without obvious cause should suggest the possibility of latent hyperthyroidism even in the absence of the conspicuous signs of Graves' disease. This kind of heart disease can respond most favorably to treatment if proper attention is paid to the underlying hyperthyroidism.

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STANDARDIZING DRIED MILK

THE Ministry of Health, England, according to *The Nation's Health* (January, 1924), has issued instructions to local authorities in regard to the labeling and composition of dried milk. Milk described as dried, full-cream milk must contain not less than 26 per cent. of milk fat; if described as three-quarter, half, or quarter-cream milk, not less than 20, 14, or 8 per cent, respectively of milk fat. Skim milk, which is to say, dried milk containing less than 8 per cent. of fat, must bear a label pronouncing it unfit for infant feeding.

THE CHEMICAL REACTION OF DUODENAL CONTENTS

BY C. W. MCCLURE, M.D., O. C. MONTAGUE AND L. L. CAMPBELL, PH.D., BOSTON

[From the Evans Memorial and the Simmons College Department of Physics, Boston.]

THE present communication reports the results obtained from a study of the degrees of acidity or alkalinity, as determined by the hydrogen ion concentration, and the buffer values determined by electrometric titration of duodenal contents derived from normal persons. Because of the character of this study, highly technical and accurate methods have been employed. But the results will be readily understood if the reader will bear in mind that pH 7 (a conventional expression for hydrogen ion concentration) represents a neutral solution, anything less than pH 7 an acid solution and anything above pH 7 represents alkalinity.

Practicing physicians are prone to consider such a study as this one so ultra-scientific as to be of academic interest only. But its practical importance is evidenced by the fact that the most generally accepted explanation for the origin of ulcer of the duodenum is based on the conception of an acid state of that region. Furthermore, various types of therapy are based on this conception, and certain diagnostic procedures have been proposed as a result of it. The conception of an acid state of the duodenum developed in spite of the entire absence of any observations which gave more than the remotest knowledge of the degrees of acidity or alkalinity (the hydrogen ion concentration) of the contents of the duodenum in the presence of pathological lesions of that region; or, indeed, of duodenal contents of normal man. In fact, with the exception of the comparatively recent studies published by McClendon *et al.*,[1] and by McClure and co-workers,[2] observations on the degrees of acidity or alkalinity of duodenal contents have been made only by methods which are conceded to yield but slight information. However, the clinician has not been alone in drawing far-reaching conclusions from the indefinite knowledge which has been available concerning this phase of the chemistry of duodenal contents. Physiologists have developed such conceptions as the acid control of the pylorus and the secretin theory, which premised an acid state of the duodenum during digestion, long before any trustworthy information was available as to whether duodenal contents were actually acid; while even today but a small number of correct observations have been made on the hydrogen ion concentration of duodenal contents of man.

The paucity of observations on the chemical reaction (hydrogen ion concentration) of duodenal contents of man led the present authors to make a somewhat more comprehensive study of the subject. The ultimate purpose of the study was an attempt to establish normal standards, which would give a basis for the interpretation of results obtained in duodenal contents collected from abnormal subjects.

EXPERIMENTAL PROCEDURE

For the purposes of the present study, duodenal contents were obtained from normal young men. The duodenal tube was given before breakfast on an empty stomach, and the end of the tube was allowed to enter the proximal part of the second portion of the duodenum, which position was determined by the aid of the fluoroscope. The subject then ate a meal consisting of either a pure protein, edestin, a pure fat, olive oil, a pure carbohydrate, arrowroot starch, or a mixture of the pure food substances. In certain experiments duodenal contents were collected before the ingestion of food and in others after drinking water.

The pH was determined by means of a potentiometer, and the duodenal contents were titrated against a solution of an acid or an alkali by means of the same instrument for the purpose of estimating buffer values.

TABLE 1

pH and buffer values of duodenal contents collected while the stomach was fasting and after the ingestion of food or of water

Subject	pH	Buffer values No. c.c. N/10 HCl or NaOH to bring 1000 c.c. duodenal contents to neutrality (pH 7)	B buffer values: No. c.c. N/10 HCl or NaOH to change pH value of 1000 c.c. duodenal contents by one	Kind of food ingested
B	8.102	169	153	Olive oil
	5.101	324	172	Edestin
	7.971	223	230	Arrowroot starch
C	7.011			Olive Oil
	6.743	36	140	Edestin
	7.745	91	122	Arrowroot starch
	6.000	250	250	Olive oil, arrowroot starch, and.edestin
B	8.075	180	167	Fasting state of stomach
A	7.588			After water-drinking

EXPERIMENTAL DATA

The pH and buffer values of duodenal contents obtained are exemplified in the accompanying representative table (Table 1). These duodenal contents were collected: (1) before the giving of food; (2) after the ingestion of water; and (3) after the ingestion of the food substances mentioned above.

The collections after the ingestion of food were made during periods in which intestinal digestion was known to be at its usual degree of activity.[3]

Study of the table shows that after the ingestion of olive oil and of arrowroot starch the duodenal contents were alkaline (pH above 7); while after edestin or the food mixtures they were acid (below 7). The fasting contents, *i.e.*, before food was given, were either acid or alkaline; while duodenal contents collected after water-drinking were alkaline. The buffer values were strikingly uniform. The significance of the findings will be discussed under their respective headings, which follow.

DISCUSSION OF pH OF DUODENAL CONTENTS

Observations[3] which have been made show that, prior to the ingestion of food or after such stimulus as is given by water-drinking, the pancreas and the liver are apparently but slightly influenced in the exercise of their external function. With food, however, the external functions of both pancreas and liver are positively augmented. Nevertheless, the pH values for all specimens of duodenal contents lay within the same ranges. Therefore, the chief point of interest from the present studies is that the flow of the bile and the pancreatic juice is apparently uninfluenced by the reaction of the duodenum; *i.e.*, varying degrees of acidity or of alkalinity exercise apparently no influence.

These findings seem definitely to support conclusions drawn from previous observations[3] and lend additional authority to them. In short, experimental evidence is offered to support the contention that acidity, as such, is not essential for the stimulation of the liver and pancreas in their functional capacity. The potential bearing of these findings on the secretin theory is obvious. Naturally, more work must be done to substantiate all the implications here presented, and this work is at present under way.

DISCUSSION OF BUFFER VALUES

Enzyme action is profoundly affected by the degrees of acidity or of alkalinity (pH) of the medium in which the active principle is dissolved: and the maintenance of the pH value of the medium is conditioned in large measure by the concentration and efficiency of the buffer substances present. By buffer substances are meant those compounds, present in a solution, which tend to resist changes in the pH value on the addition of either acid or alkali. Buffer conditions are included in the present report as a part of the examination of the duodenal contents, and the values obtained are collated in Table 1. The buffer values were determined by titrating duodenal contents with tenth normal solutions of acid or alkali, depending on the initial reaction of the duodenal contents; the end or neutral (pH 7) point was determined by use of the potentiometer. In the table of this article the figures given for buffer values represent the number of cubic centimeters of tenth normal acid or alkali required to change the pH value of 1000 c.c. of a particular specimen of duodenal contents by one (1). When calculated on this basis, the buffer values for duodenal contents are surprisingly uniform, when the range of the pH values is considered.

The presence of olive oil would not influence the titration value of duodenal contents on addition of a solution of HCl. The amount of either edestin or of arrowroot starch which were grossly visible in duodenal contents were minute; as were, also, the quantities of non-protein nitrogen or of sugars, as determined by analysis. For these reasons the buffer values were slightly, if at all, influenced by their content of food substances.

The absence of buffer action of the food substances used, and the uniformity found in the buffer values of the duodenal contents, indicate that the physical chemical factors governing the buffer conditions were approximately the same in all specimens; *i.e.*, the findings indicate that the various types of food substances had about the same stimulating effect on the external functions of the liver and pancreas as regards the production of buffer substances.

CONCLUSIONS

1. The pH of duodenal contents varied after the ingestion of various food substances. Duodenal contents were acid after the ingestion of the protein and the mixture of food substances, and alkaline after the fat and carbohydrate food substances.
2. No relation was found between the pH of duodenal contents and the stimulation of the flow of bile and pancreatic juice.
3. The findings indicate that the various types of pure food substances had about the same stimulating effect on the external functions of the liver and pancreas as regards the production of buffer substances.

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SYMPTOMS OF PULMONARY TUBERCULOSIS: THEIR ORIGIN AND FREQUENCY[*]

BY OLIN S. PETTINGILL, M.D., MIDDLETON, MASS.
Essex Sanatorium

A DISCUSSION of all the various symptoms of pulmonary tuberculosis and its complications would involve nearly a complete review of the symptomatology of general medicine. This discussion will be limited to the symptoms that usually occur in early tuberculosis or the incipient and moderately advanced stages. When we recall the pathology of tuberculosis we are impressed with the varied and multiform appearance of the lesions often seen in the same lung, and which represent different stages in the processes of proliferation, exudation, degeneration and repair that may be taking place. The invasion of the tubercle bacillus may cause only a slight reaction in the tissues (proliferation of epithelioid cells) which may disappear (abortive type) or the proliferation and disintegration may continue to the formation of tubercle and necrosis with spreading of foci to other parts. The infection with tissue reaction in varying degree may be present without disturbing bodily function. It is only after the host experiences some derangement of function, due to the presence of, or absorption from this process, that clinical tuberculosis does exist. The first feelings of illness may be some general discomfort or disturbance not suggestive of pulmonary pathology, or it may be at once a guide to the location of trouble. The physical findings and x-ray in pulmonary tuberculosis give us the dose or type and extent of lesion; the symptoms show us how long and how successfully the patient is dealing with this condition. To obtain an accurate history from some patients may be time-consuming, but it shows as no other procedure may the clinical activity of the process.

CLASSIFICATION OF SYMPTOMS

The symptoms of pulmonary tuberculosis readily fall into two fairly distinct groups: *viz.*, local and constitutional, with a third reflex group, not as clearly understood and which may to a certain extent include some of the symptoms found in the other groups. It is not necessary in an audience of this kind to explain this classification except perhaps to quote the definitions given by Krause: "Local symptoms are those sensible manifestations of functional disorder or disability which are due to the effects of the tuberculous process in the tissue (organ) involved or any tissue which may be integrally connected with the diseased part. Constitutional symptoms are those feelings of illness which proceed from the general or bodily effects of the tuberculous process and which manifest themselves by general bodily disorder or by functional disturbances of parts remote from the foci of infection.''

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[*] Read before the Lawrence Medical Society, Oct. 22, 1923.

LOCAL SYMPTOMS

The usual local symptoms of early pulmonary tuberculosis, as shown by 59 incipient and 278 moderately advanced cases admitted to Essex Sanatorium, are, in the order of their frequency, cough, expectoration, pain in the chest, blood-spitting, and dyspnea.

COUGH

From the histories of 579 known cases in all stages admitted, cough was the initial conspicuous symptom in 56.1 per cent. In 59 incipient, cough was or had been present in 72.8 per cent., and in 278 moderately advanced it occurred in 89.5 per cent. It is the most common complaint that occurred in this series of cases.

Cough is caused by bronchial irritation from a near-by tuberculous process or from tuberculosis of the bronchi. Tuberculous foci, by pressing on bronchi or a near-by inflammatory reaction producing congestion in adjacent bronchi, may excite cough while the tubes themselves remain free from the destructive action. Miller has shown how nerves and ganglia within the lung may be "caught" in spreading infection and produce cough. The contents of a cavity may drain into healthy tubes and make it necessary to expel this material by coughing.

EXPECTORATION

Expectoration usually originates from the same source that produces cough. It consists of material elaborated by the bronchi or exuded into the alveoli or discharged into the bronchi from communicating ulcerating tuberculous foci. There are usually two or more of these constituents in varying proportion present in the sputum. The mucous glands situated in the larger bronchi are stimulated to action by sufficient irritation of the tubes themselves or by the nerves which supply them. Certain types of tuberculous processes arouse the pouring out of inflammatory exudate from the air cells and bronchi. The necrotic material, or whatever makes up the interior of tubercle, gains access to the bronchi by a destructive, ulcerative process. This material contains the tubercle bacilli found in sputum, and they are usually found as long as this ulceration remains open. Necrotic material is irritating to the mucous membrane of the bronchi which it traverses, and leads to an added amount of mucus. Expectoration in varying amounts was found in 49.1 per cent. of the incipient cases, and in 84 per cent. of the moderately advanced. There was a productive cough in a little over half of these patients.

BLOOD-SPITTING

Blood-spitting may be the first symptom noticed by the patient. It was listed as the first symptom of the disease in 6.4 per cent. of 579 cases studied. It usually comes from an erosion or tear in a blood vessel, capillary in size or larger. Exudation of red blood cells may occur into air cells or bronchi from acute inflammatory processes of great intensity. It is usually in this instance not the bright red blood which results from a tear in a vessel, but darker in color. Fifty-two and one-tenth per cent. of the moderately advanced and 40.6 per cent. of the incipient cases gave a history of blood-spitting before admission to the sanatorium.

PLEURITIC PAIN

Chest pains of phthisis are usually pleuritic in origin. It has been observed by Miller that involvement of nerves and ganglia within the lung may cause pain. It may also accompany bronchial irritation. Over half of our early cases give a history of some form of chest pain, pleuritic in type.

DYSPNEA

Dyspnea may be both a local and constitutional symptom. In the chronic fibroid type of disease, dyspnea may be produced by the diminished lung capacity and loss of respiratory function. It may be a result of pain in acute pleurisy or a symptom of pressure in a large effusion into the pleural cavity. As a constitutional symptom it usually occurs in the advanced stages, where there is much emaciation and general loss of strength.

CONSTITUTIONAL SYMPTOMS

The common constitutional symptoms of tuberculosis are undue fatigue or susceptibility to fatigue, loss of weight, afternoon fever, rapid pulse rate, night sweats, general nervous instability, and digestive disturbances without organic disease of the digestive tract. In 579 admissions to the sanatorium 17 per cent. gave a history of undue fatigue as the first indication of illness. Among 337 early cases, 40 per cent. had night sweats before starting treatment while 54 per cent. had been known to have afternoon fever. This series of cases, while comparatively small, corresponds to others similarly studied.

ORIGIN OF CONSTITUTIONAL SYMPTOMS

In general, constitutional symptoms are produced by intoxication from the tuberculous process. Tuberculin will not produce a reaction in normal animals, but to an animal made hypersensitive by a tuberculous process, it is highly toxic. A normal animal inoculated with tubercle bacilli does not become ill at once, but if a focus of disease is present the reaction is immediate.

There is no specific toxin from the tubercle bacillus similar to that from diphtheria or tetanus bacilli. The toxin does not differ markedly from that of any protein. Krause[2] states that tubercle bacilli undergoing disintegration can give rise to constitutional symptoms, but there are some features of tuberculous intoxication to lead one to think that other elements are concerned. Besides bacilli entering into foci, there are cellular elements undergoing dissolution and degradation of their chemical constituents. They are largely protein by nature and give rise to split products of protein. It has been shown by experiment that the expressed out contents of tubercle or even normal tissue are poisonous to the same species of animal from which it was obtained. All of us can be poisoned by our own tissues if enough material in proper chemical state can be absorbed in a given time. This is shown by the toxemia of burns and extensive comminuted fractures. It is not for us then to assume that the toxemia of tuberculosis is produced by the absorption of disintegrating substances of all the elements which enter into foci, and that the cellular elements probably predominate.

The amount of intoxication must vary according to the condition and extent of foci and the animal body involved. A tubercle is a morbid structure, avascular and "walled off" in varying degree from surrounding tissues. Physiological communication between foci and the body must take place through the lumina of blood vessels or, which is probably more common, by the tissue lymph. Facility of communication varies with the completeness of the tuberculous investment, and activity of communication depends, with everything else equal, on the physiological activity of the tissues around the foci. When the focus of disease is in the lungs, which is an organ of varying physiological activity according to body requirements for oxygen, anything that increases the pulmonary circulation will liberate more of this poisonous material unless the process is so well "healed" that absorption does not take place.

Acute exacerbations of symptoms occurring in the ordinary course of events in clinical tuberculosis may result from the physiological activity of the organ involved liberating more toxins from the tuberculous focus, or from an extension of disease to neighboring tissues. In the first place, the reaction differs in no respect, except possibly duration from the reaction seen in artificial tuberculin intoxication. In extension of disease, the constitutional symptoms usually precede by days the other evidence of increased involvement.

SUMMARY

1. Cough is the most common symptom complained of in incipient and moderately advanced stages in this disease.
2. Productive cough occurred in a little more than half of the early cases.
3. Tubercle bacilli are not present in sputum until ulceration of a focus of disease occurs communicating with the air passages, and continues as long as the ulceration remains open.
4. Physical signs, x-ray, or a focal tuberculin reaction must prove the presence of pulmonary tuberculosis.
5. Constitutional symptoms show the presence of clinical tuberculosis, and their severity show the degree of toxemia.
6. The condition of the weight under ordinary conditions of life, susceptible to fatigue or ease of tire, the presence of afternoon fever and rapid pulse, are the foundations for making a prognosis.
7. The time has passed when it is necessary to defend rest, both local and general, in the treatment of active tuberculosis, whether the rest be a retentive apparatus for joint, pneumothorax for lung, or whispered voice for the larynx.
8. Rest in bed lessens the liberation of toxins from foci and conserves body energy.

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THE ULTRA-AUDIBLE MICROPHONE

THE press reports the development of an ultra-audible microphone by Dr. Phillips Thomas, research engineer of the Westinghouse Electric Company. This instrument consists simply of a ring containing two electrodes, between which plays a "glow discharge" produced by high voltage. It will record sounds with pitches of upward of one million vibrations per second, whereas the range of the human ear stops at a pitch of about twenty thousand vibrations per second. It is believed that this instrument will do for the ear what the microscope does for the eye. By such advances as these our knowledge of the world about us expands, covering fields previously quite unknown. The application of this device to medicine is as yet undetermined, but it is safe to say that the microphone is sure to contribute something to our better understanding of the workings of the human organism, and that it may be the means of increasing our diagnostic ability to a degree now unthought of.

INTRINSIC SPLINT TRACTION

BY J. WARREN WHITE, M.D., BOSTON

The purpose of this paper is to report a simple type of intrinsic traction, which, in my experience, has proved of value, and which has not been employed, to my knowledge, in the form described below. Although a casual search of the literature has revealed no type of apparatus embodying its three main principles, it undoubtedly has been used by others. These principles may be briefly stated as follows: First, facility in maintaining a desired amount of traction; second, comparatively accurate mensuration of force employed; and third, ease of application, adjustment and transportation.

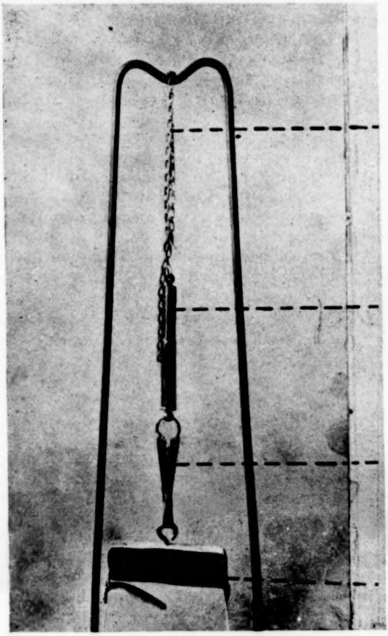
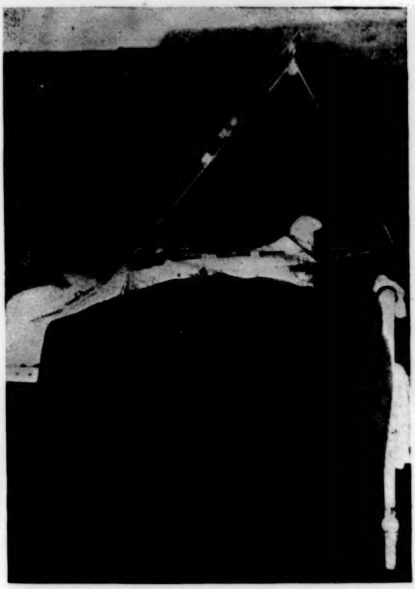

Window chain.
Twenty-five-pound spring balance showing graduations read directly to show amount of traction applied.
Bunch of rubber bands to increase elasticity.
Adhesive "spreader."

FIG. I.—Showing arrangement of the three elements producing the traction, one end attached to an adhesive "spreader" and the other to the distal extremity of a Thomas splint.

This method of producing extension was the result of working with the early ice-tong type of skelatile traction, where the necessity existed of maintaining a continuous pull for considerable periods of time. The mechanics of the ice tong in the hands of the iceman applies to its use on the femoral condyles; that is, as long as force is maintained in lifting the cake of ice or exerting traction on the skeleton, the tong will stay in place. If this force is not continued in either case, there is a probability of slipping and displacement of the instrument. The necessity of a more or less fool-proof and stable apparatus was therefore apparent. With the adjustable tongs being made now, the need of continuous traction is not so imperative.

As its name indicates, the traction is produced and applied within the limits of the splint. A Thomas leg splint, or some such modification as would be necessary in employing it with an upper extremity, is the basis of the apparatus. This splint should be sufficiently long to allow for at least two feet between its distal tip and the distal end of the arrangement that is fixed to the extremity, whether is be tong, if skelatile traction is used, or "adhesive spreader" or its equivalent, if "skin traction" is utilized. The advantage of this type of traction over the weight-and-pulley arrangement will be taken up later on in this paper and I will now describe the mechanical details upon which it depends.

The pull is exerted and maintained by three elements arranged in series, one end of which applied to the distal extremity of the splint and the other end to the distal extremity of the arrangement fixed to the point at which traction is desired. The proximal element in this series is a bunch of rubber bands of thickness and number suitable to the space available and to the amount of traction deemed necessary. To these india-rubber bands is fastened a spring balance of about twenty-five pounds capacity, of the type used for weighing infants. A small, nicely nickeled spring balance, as above, can be obtained at most surgical supply houses for about a dollar, which will be satisfactory for this purpose. I have found that they retain their accuracy, although they do stretch out to some extent, even after being used on a constant traction varying from seventeen to seven or eight pounds for six weeks or more. To the other end of this scale is hooked a metal chain of the type now used in heavy windows instead of window cord. This chain is passed about the distal end of the splint and hooked back on the scale through a link that will give the traction desired, which is read directly on this scale. It has been found that the combination of the india-rubber bands and the balance makes it possible by its elasticity to maintain a given traction for an indefinite period with little need for adjustment. Rarely has more than twenty pounds traction been found necessary to effect correction of overriding in fractured femurs, and in recent cases I have never had to use more than twenty-five. It might be stated here that I have found it better to employ many small rubber bands than a few of the larger type, as they can be handled more easily and it makes little difference if two or three should snap.



Cord regulating passive motion under control of patient.

Upright holding splint in anti-aircraft position, resting on foot of bed.

Traction without using chain because of lack of space, amount used obtained by employing proper number of rubber bands.

FIG. II.—Intrinsic splint traction being used in postoperative care of an arthroplasty on a knee. Ten pounds traction is used and early passive motions under control of patient within the limits of pain urged.

The usual form of intrinsic traction commonly described depends for its action on the principle of the Spanish windlass. This has been found to be impracticable except in emergencies, as there is no way of measuring the amount of traction applied or maintaining it at a constant amount. The relative lack of elasticity results in either too much or too little traction, producing discomfort and pressure sores in the former event and no correction in the latter. Any slight variation in the distance from the point at which traction is applied on the limb and the distal extremity of the splint produces a great amount of variation in the force exerted. The stretching of the rope used in the windlass also tends to reduce the amount of traction in a short time.

While this apparatus is used most commonly on the lower extremity, it can be almost equally well employed with a Jones humerus extension splint, the Thomas traction arm splint, or even in forearm conditions where a Jones splint is used and traction desired. While I stated above, two feet is wanted where possible, this type of traction may be employed within a space of ten inches.

The leg is supported by the usual transverse slings attached to the bars of the splint, which itself is supported by some form of adjustable upright fixed to the foot of the bed or the Bradford frame, the latter being most convenient in handling these cases, which are necessarily bedridden, while active traction is being employed. If the pressure on the ischial tuberosity and pubic ramus becomes uncomfortable, the foot of the bed may be elevated, allowing the body to pull slightly away from the ring. This, naturally, increases the amount of traction, which is immediately noted on the scale, and the necessary adjustment can be made. The apparatus is so stable that no risk is run in moving the patient on the frame to another bed, or to a truck for ease in transportation outdoors or to the x-ray department. The fact that the entire apparatus is a unit on the frame and cannot be easily disarranged is an argument in its favor when one compares it with the cumbersomeness of the weight-and-pulley mechanism usually necessitating the Balkan frame. The ease in obtaining x-rays is of great value in effecting and maintaining position with a minimum of traction. This in itself predisposes good results. Excessive traction that tends to separate the fragments must be avoided as it is undoubtedly a cause of delayed union. Sufficient force to maintain position is all that is desired.

The efficiency of this arrangement will appeal to the man who has had to care for fractured femurs on a busy ward surgical service, where it is difficult to give these cases the necessary personal attention that will insure the proper functioning of the extension apparatus. The usual way of treating the average fractured femoral shaft at present is by extrinsic weight-and-pulley traction with suspension of the extremity. This is, of course, more efficient than the old Buck's extension, even if a Volkman's sliding rest is used to minimize the friction of the lower leg on the bed. Not infrequently the morning hospital visit finds cases, supposed to be "on traction," without a pound's pull being exerted. A few of the commoner reasons for this are: sliding the patient in bed, bringing the "spreader" against the upright holding the pulley, the rope being off the pulley and wedged down beside it, the pulley itself being jammed for some reason or other, the weights resting either on the floor or on a crossbar at the foot of the bed, slipping a knot in the rope against the pulley, and so on.

It is not only for reducing and maintaining fractures in apposition that this form of traction is useful, but it is for any condition where traction is indicated, such as in the correction of flexion deformities, immobilization in acute or chronic arthritis or septic joints, including cervical caries or arthritis, where the Bradford frame is used as a splint, and in arthroplasties, particularly of the hip and knee. The convenience and efficiency of this type of apparatus suggests its use where the more cumbersome and complicated weight-and-pulley traction would not be considered.

240 Newbury Street.

EVENTRATION OF THE DIAPHRAGM: REPORT OF A CASE

BY PAUL R. WITHINGTON, M.D., MILTON, MASS.

On October 22, 1922, I was called to see a business man of 64. His *F. H.* was entirely negative. His past history consisted of a severe attack of measles in childhood, and "nervous prostration" 20 years ago which had laid him up for a year. Otherwise, except for four or five attacks of his present illness at various times through his life, it was negative.

His *P. I.* had started very suddenly after dinner with severe pain in his left flank. Coincident with the pain he vomited with considerable relief. He thought that essence of peppermint and spirits of nitre had also helped him. There had been no dysuria nor nocturia.

On my arrival the attack of pain had gone and he was very comfortable. I contented myself by going over his chest anteriorly and found a condition which I thought was dextrocardia. Dullness extended to the right nipple and ended at the left edge of the sternum. Heart sounds were heard best at the right nipple. I gave him directions in the event of future attacks, and suggested an x-ray to determine the size of the calculus. His urine was smoky, contained much albumin and many red blood cells, but no casts and no crystals. Five days later his urine was again examined and had entirely cleared up.

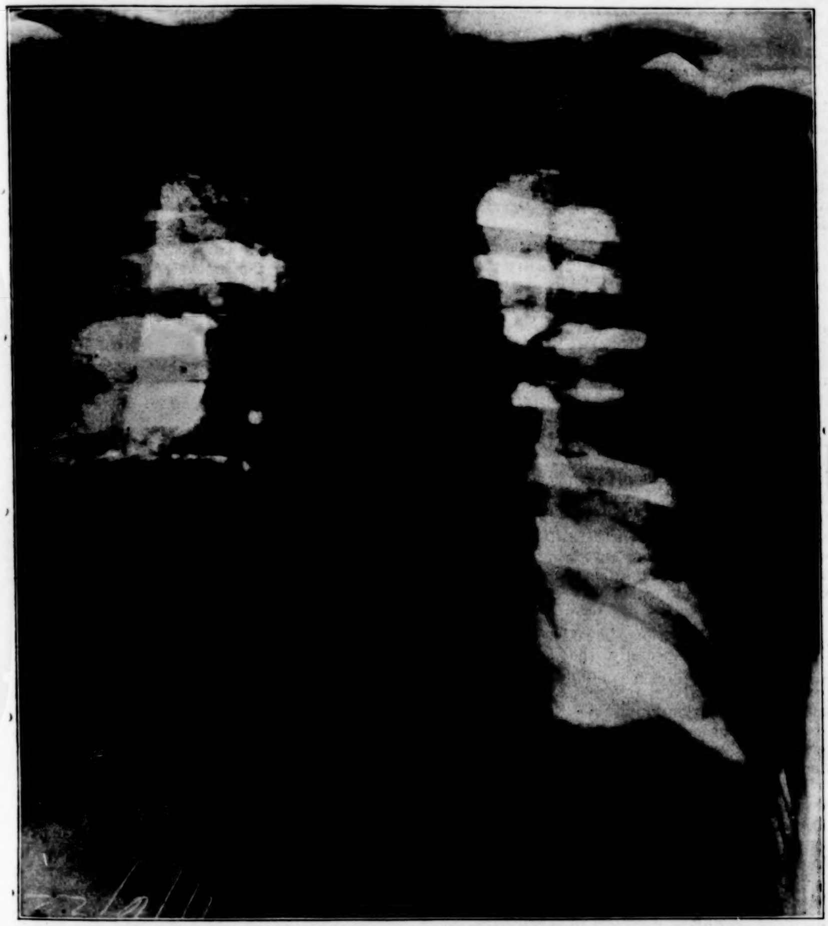
I did not hear from him again until November 4, that is, 13 days after my first visit. He had been to the Maine woods with some contemporaries on a fishing trip, and, though he had had no more renal colic, he noticed that he was much shorter of breath than were the other men. Furthermore, he had "always" had much indigestion and "gas," but admitted that his hygiene of eating was very poor. He ate prodigiously of starchy foods and bananas; never masticated his food, but washed it down with large amounts of water, tea, or coffee.

P. E. Pupils equal and reacted to light; throat negative; tongue clean; teeth in good condition.

Heart dullness extended as on first examination. Sounds were of good quality and heard best just inside the right nipple. There were no murmurs, and the rate was slow; rhythm regular; blood pressure 125/75. The lungs showed marked dullness in the axillary line on the left, and flatness below the angle of the left scapula with absent breath and voice sounds in this region. Elsewhere the breath sounds were normal. The abdomen was tympanitic and somewhat distended. His knee-jerks were normal, and there was no edema in his extremities. White blood count 8000; hemoglobin 80 per cent.; smear normal. Wassermann was later reported negative.

I now changed my diagnosis from congenital dextro-cardia to dextro-cardia due to fluid in the left chest pushing the heart over, but could not account for the apparently normal area of lung on the left, anteriorly, unless the fluid was encapsulated.

The films of his chest showed the following condition:



In 1916 Bayne-Jones collected all the cases in the literature up to that time. There were 45 in all—36 males and nine females. Since then three more cases have been reported. However, I am told by roentgenologists that the condition is not as rare as these statistics would seem to indicate; that they are, in fact, fairly common.

The first reported case was described in 1774 by J. L. Petit; in 1829 Béclard and Cruveillier defined it as "diaphragmatic eventration," and in 1894 J. Tenant recorded a case of partial atrophy of the diaphragm. At autopsy he found a laxity of the two posterior thirds of the left side of the diaphragm which had been pushed up as high as the second intercostal space. The diaphragm, which was otherwise normal, was lax and flabby at this point, the muscle fibers being very thin and scattered. In 1900, Hirsch, on the one hand, and Hildebrand and Hess, on the other, had a prolonged discussion about a man named Schneider. The former considered that he had a diaphragmatic hernia, but the two latter considered it an eventration, because electrization of the phrenic nerve caused a marked contraction of the convex shadow, and autopsy upheld their contention.

Widermann and Glaser studied a case of a man who had had symptoms of gastro-intestinal occlusion, but on whom the surgeon, at operation, could find no abnormality except a diaphragm raised to the level of the left nipple. Autopsy showed that the left side of the diaphragm was thin and pale in color, and the muscle fibers were the seat of a marked fatty degeneration.

Fink and Manges reported a case in detail last year. In their case the predominating symptoms were pain in epigastrium and left lower chest of three months' duration, and associated with attacks of vomiting. Pain radiated to the back, and continued with varying intensity and with no relation to food intake. There was dyspnea and loss of weight. The diagnosis when first seen was gastric neurosis, and an x-ray at that time ruled out gastric ulcer or cancer.

Physical examination showed a limitation of the left chest—especially the lower portion; apex beat not visible nor palpable; slight tympany below third rib in anterior axillary line, merging with tympany over stomach below; breath sounds absent over left lower chest and percussion here flat tympany. A paracentesis was done with negative results.

The general consensus of opinion seems to be that the condition is a congenital weakness of the diaphragm—that it is usually left sided because of the embryonic development of the diaphragm, the posterior portion of which is last to form. The other possibilities are: first, disease of the phrenic nerve causing atrophy of the muscle which it supplies (*viz.*, the diaphragm) or, second, greatly increased abdominal pressure, causing a weakening of the diaphragm.

That the same condition is always the cause, it seems to me, is open to argument. The experiment of Hildebrand and Hess in stimulating the phrenic nerve electrically and getting a contraction would seem to rule out an atrophy of the nerve trunk as a cause perhaps in that case. Betchov says that in the cases where the diaphragm has been examined there has been fatty degeneration of the few muscle fibers which still remained imbedded in a fibrous tissue, and he holds that such changes cannot be attributed to the phrenic nerve. However, if they are degenerated they cannot be congenitally missing either.

The argument against increased abdominal pressure is that, if it were the cause, there would be more cases in women than in men (instead of the four to one predominance in males). To me this argument seems faulty because the pressure is great only for a comparatively short time in pregnancy while there are also periods of normalcy between times.

That the gastric symptoms are always the *result* of the condition seems to me also to be open to doubt. That constant pressure of a distended stomach against the left side of the diaphragm causes the muscle to thin out and atrophy is more likely, at least in this case. We know that his stomach was tremendously abused by his choice of foods and methods of eating. Furthermore, he had been repeatedly carefully examined for life insurance and had never been refused nor told that there was anything abnormal about him (which should have been the case had it been a congenital condition). The dyspnea, too, was noticed only recently, according to the history. Then, of course, the left side of the diaphragm is the one which is contiguous to the stomach.

In the case of Fink and Manges, which I have quoted at length, there was an x-ray of the stomach taken at the onset which, they said, "ruled out ulcer or cancer"; and no remarks were made to indicate that there was anything abnormal with the diaphragm at that time. Had the eventration existed then it seems as though it might have been discovered, and if congenital *only* it would have existed then.

Therefore, my feelings are: first, that the cause may not always be the same; and, second, that the chances of the condition being a congenital one without any associated factors is slight.

One summary of the subject says there may be no subjective symptoms during life (I cannot help wondering what subjective symptoms after death would be!), but that in some cases it may result in gastric and peritoneal phenomena resembling strangulated hernia, these being due to the progressive torsion of the stomach which pivots around the fixed cardia. He goes on to say—which is of interest to me since it applies so perfectly to my mistake in the diagnosis—that "clinically this affection may be mistaken for dextro-cardia, either congenital or following a pleural collection, or hydro-pneumothorax."

Today, one year after being first seen, the patient is apparently in the same condition, although, unfortunately, he will not consent to an x-ray examination. He, furthermore, admits that he continues to abuse his stomach by choice of foods and methods of eating.

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A CASE OF RECURRENT IMPACTED CALCULUS IN THE DEEP URETHRA

BY O. DRAPER PHELPS, M.D., WORCESTER, MASS.

[From the Urological Service of Worcester City Hospital]

This case is of interest from the fact that the calculus found was firmly imbedded in the prostatic urethra and protruded into bladder, almost completely stopping the urinary flow.

The patient was admitted to the hospital August 22, 1923, a well developed and nourished laborer of forty-three, lying quietly in bed. His physical examination, other than local, was not abnormal. Urine was oozing from a postoperative suprapubic sinus and from the urethra. By rectum, the prostate was apparently normal, but there was a hard mass which, apparently, seemed to be in the prostate itself. A sound met obstruction in the prostatic urethra and a distinct click was audible as it struck the obstruction. Diagnosis of impacted calculus was easily made.

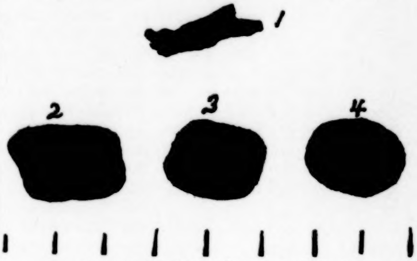
For several days the patient refused operation, but finally consented.

The bladder was opened by passing a grooved director along the course of the suprapubic sinus. This probe did not go directly to the bladder, but stopped in a pocket in the space of Retzius, where there was a small calculus (1), size ½ x 2½ c.m. This being removed, the fistula was again found and the director passed to bladder and incision made sufficiently large to admit of exploration. Three calculi were easily felt: one slightly larger than the others, one in region of internal meatus which seemed fixed, and two others (3 and 4) loose in the bladder, which were easily removed.

Attention was now directed to the calculus which was fixed. A small portion of it was felt against the examining finger, but it was surrounded by tissue and had to be shelled out with considerable difficulty. The entire calculus was confined to the prostatic urethra and was 2 x 2 c.m. and oval in shape.

Recovery was uneventful except for an epididymitis which suppurated, and he left the hospital on the thirtieth day.

He had been a patient at this institution in April, 1918. His past history had been in brief as follows: About twenty-five years ago, he was operated upon for stricture of urethra; he had a stormy convalescence and took no follow-up treatment. Evidently a retrograde catheterization had been done. For a few years he had no particular difficulty in urinating, but gradually the stream became smaller, until a month before entering our hospital for the first time in April, 1918, under the care of my colleague, Dr. W. D. Bieberbach, he had been able to relieve himself only by dribbling.



1. Shows the calculus found in space of Retzius.
2. Shows the calculus impacted in urethra.
3 and 4. Show the calculi loose in bladder.

His condition at that time presented points of interest and the case was described in the Boston Medical and Surgical Journal of August 1, 1918, by Dr. Bieberbach. His findings, in brief, were those of a complete stoppage due to calculus in the urethra. X-rays confirmed the diagnosis and operation was undertaken. The operation was done through the perineum, and besides the impacted stone in the urethra, which had to be crushed and removed, there was a large calculus in the bladder, which was also crushed. All particles were washed out and the urethra closed as in the usual external urethrotomy operation and with a large-sized indwelling catheter. He left the hospital on the twentieth day after operation.

Now it is of interest to conjecture how the calculus in the space of Retzius formed: Evidently the suprapubic incision was causing no trouble at the time of his first entering our hospital, and his original urethrotomy and probably retrograde catheterization had been done twenty-five years previously.

It is also of interest to conjecture whether the calculi of the second operation for impaction in the deep urethra and bladder were caused on account of stricture or because there was a nucleus which had been left at the time of his first operation for impaction, or for both of these reasons.

The analysis of the calculi recently removed showed them to consist of calcium magnesia phosphates, uric acid, and a trace of calcium carbonate.

TOXIN-ANTITOXIN MIXTURES

A Caution to Physicians

BY EUGENE R. KELLEY, M.D., BOSTON

Commissioner, Massachusetts State Department of Public Health, Boston

The recent extreme cold spell in New England has disclosed the fact that the freezing of toxin-antitoxin mixture, used in protection against diphtheria, may cause it to produce unusually severe reactions. We have had an exceptional experience, showing the effects of freezing upon toxin-antitoxin mixture, and the reason for publishing this note is to caution physicians.

The circumstances are as follows: A toxin-antitoxin mixture, Lot No. 100 T, containing 1 L+ dose of toxin neutralized with over one unit of antitoxin, was distributed and used freely throughout the State without any ill effects being noted. This lot had passed satisfactorily all laboratory tests for harmlessness and, furthermore, had been tested and approved by the Hygienic Laboratory of the United States Public Health Service. Some of this same lot, sent to Concord, Mass., was kept in an icebox exposed to a temperature of about zero. This toxin-antitoxin mixture, after thawing, was injected into 23 children, producing severe local reactions with some constitutional effects, indicating that the toxin had been freed from its combination. Upon examination, it was found, in fact, that the freezing had in some way dissociated the antitoxin, for upon very close inspection it was found that the mixture had become slightly turbid, when compared with the original mixture. The matter was at once carefully investigated by the Director of the Division of Biologic Laboratories, who again tested the reserve stock of the same mixture, Lot No. 100 T, for potency and purity, and found it to be entirely safe and satisfactory in all respects. He then made the experiment of freezing this mixture for 3 hours and 35 minutes, thawing it, and found that it was still clear and had its original qualities. He then froze another sample of the same mixture for 18 hours, and upon thawing found that it was turbid and had developed a toxicity which it did not originally possess. It is, therefore, clear that toxin-antitoxin may be dissociated by precipitation of the antitoxin upon severe freezing.

The circumstance, revealed clinically, was entirely unforeseen, and consultation with available experts on this subject disclosed that it is a novel experience. The lesson to be drawn from it is that physicians must see to it that, while they must keep the toxin-antitoxin mixtures cool, it is of great practical importance to prevent their being frozen. All vials and ampules of diphtheria toxin-antitoxin mixture, which, either during shipment or subsequently, might have been subjected to freezing temperatures, should under no circumstances be used but be returned.

The matter is being investigated further and will be made the subject of a fuller report.

Book Reviews

The Hygiene of Marriage. By Isabel Emslie Hutton, M.D. London: William Heinemann (Medical Books) Ltd. Pp. 112. Six shillings.

Dr. Hutton's little book is intended chiefly for those about to marry, and impresses the reviewer as being admirably suited to the purpose which it is planned to serve. It is written in a straightforward way, absolutely free of any salacious or sentimental trappings. The facts stated are the accepted ones; the book does not advance any new or unproved theories. If any criticism were made, it would be that in places the author might have been a bit more explicit and have gone more deeply into the physiology and pathology of various conditions. It may be, however, that Dr. Hutton is right in keeping the whole thing very simple, and in placing it before the people she wishes to reach in a most elementary way. There are many requests for just such a book as this, and we shall not hesitate to recommend it.

Industrial Hygiene and Medicine. By E. W. Hope, M.D., in collaboration with W. Hanna, M.D. Pp. 766. New York: Wm. Wood and Company. 1923.

A work of very uneven merit. Numerous inaccuracies, such as in the chapter concerning industrial poisonings, the inadequate treatment of many important subjects and disproportionate emphasis upon others, together with a disconcerting mingling of the most recent information with the obsolete, discourage a desire to accept this book as a welcome and authoritative addition to the few worthwhile volumes relating to industrial health.

There is much material of importance and interest in the chapters on dust, on occupational affections of the skin, and on industrial physiology. Of notable value is the section on anthrax in the chapter on industrial infection.

There are extensive bibliographies following each chapter, and many illustrations are of decided interest.

The book is based largely upon British experience, though without evidence of any prejudice against contributions to industrial hygiene by foreign authors. An appendix contains a useful epitome of British legislation affecting industrial hygiene.

It is not a work which can be enthusiastically commended, without reservation, neither is it one to be avoided.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, ASSISTANT EDITOR

CASE 10071

An American of fifty-five, formerly a dancing master, entered November 9 complaining of a feeling of general failure and weakness.

F. H. He was the youngest of thirteen children. One brother died of galloping consumption when the patient was a very small boy. He had no close association with this brother.

Habits. He had been a heavy smoker and drank occasionally. He ate most of his meals at restaurants at irregular hours.

P. H. He had always been healthy and athletic. He remembered no childhood or other diseases. He possibly had some earaches in childhood.

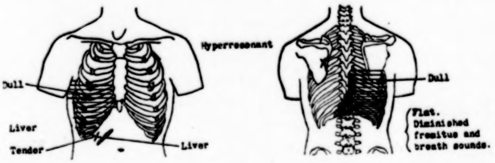
Twenty years ago when on a farm he weighed 216 pounds. Recently his weight had been constant at 183.

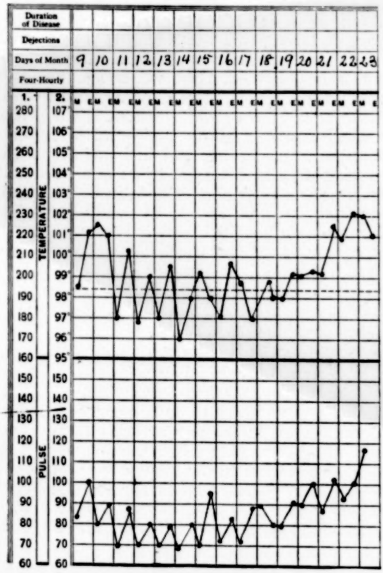
He was emotionally well balanced, but seemed mentally hazy and showed remarkably poor memory in contrast to his good general intellectual equipment. During a chest tap he was disturbed by a sensation "as if his insides were being extracted."

P. I. Seven years before admission, during a particularly severe winter, he had an attack of bronchopneumonia. He was in bed a week, and did not resume his usual work for five weeks. From this time he was symptom-free until ten months ago, when he had an attack of influenza —running nose, cough with a great deal of thin white mucoid sputum, mild feeling of fever, some sweats and chills. He had a sensation of tightness in his chest relieved by quinine, whiskey and hot lemonade. He took enough quinine to give him some cinchonism. He lost only two days from his work. Although the attack cleared up quickly and he felt perfectly well the cough persisted with small amounts of sputum. Six months ago he weighed 183 pounds, his usual weight. Then in less than a month a "fluttering" sensation suddenly developed in the region of the xiphoid, sharply limited and associated with excruciating "contracting, griping, tearing" pain. This remained more or less constant with remissions and relapses associated with increase of the cough, loss of appetite and constipation. At this time and later he noticed that the sputum was brownish, and he had some dyspnea. For five months he had slept heavily nine or ten hours at night. His bowels had been constipated and he had had no appetite. He had peculiar cravings for certain foods. For instance, at the time of the "fluttering" sensation he would eat nothing but asparagus. At other times he ate a great deal of fresh fruit. For five months he had urinated six to eight times by day and two to three times at night. He thought the amount of urine was increased; possibly he had been taking more fluids. Five months ago he went to a physician, who made a diagnosis of pleurisy, put him to bed, and withdrew three quarts of clear yellowish fluid from his chest with great relief. The pain and fluttering immediately disappeared, and much of the cough and dyspnea. After a week he rapidly grew worse and developed very marked dyspnea and choking. At a second tap a quart of fluid similar to the first was withdrawn, with great relief. He rapidly improved. He thought he lost a good deal of weight during these two weeks. For the next three months he felt better and better, was able to do his work, and increased in weight to 165 pounds. His cough still remained, with a little sputum, sometimes brownish. Six weeks ago he again began to lose weight, to feel weak, and to have increasing dyspnea and persistent slight cough. At admission he was dyspneic and orthopneic, weak, rather cachectic, and had a dull painful sensation deep in his chest when he moved suddenly. For a week he had been in bed, had had a tendency to doze at odd moments, and slept ten hours almost as if drugged. Recently he had felt cold most of the time.

P. E. "An emaciated elderly man," very weak and breathing somewhat rapidly. Neck slightly stiff. Teeth very bad. Marked pyorrhea. Throat red. Chest flattened in the right back. *Lung* signs as shown in the diagram. Apex impulse of the *heart* and right border of dullness not found. Sounds poor. No other abnormalities. Pulses and arteries normal (not much sclerosed). *B.P.* 140/90. *Abdomen.* Tenderness and spasm in the right upper quadrant. Liver edge two inches below the costal margin. *Genitals* normal. *Extremities.* Coarse tremor of hands and tongue. *Pupils* normal. *Reflexes.* Suggestion of Kernig and definite Brudzinsky. *Rectal examination* unsatisfactory on account of pain and spasm. Hemorrhoids.

T. and *P.* as shown in the chart. *R.* 18-40. *Urine.* Normal amount. Sp. gr. 1.022-1.026. Cloudy at one of three examinations, occasional leucocytes at all, five to ten red blood corpuscles per high power field at the last. *Blood.* Hgb. 80%. Leucocytes 8,000-18,600, polynuclears 71%, many young polynuclears and broken cells. Platelets greatly increased. Red cells normal or slightly achromic. *Sputum.* (Single specimen, probably from nasopharynx.) No blood or tb. *Chest tap.* Eighth right interspace below scapula. About 2 c.c. of bloody fluid, probably not from cavity. Culture negative. On standing the fluid clotted and appeared to be whole blood. A tap in the eighth space in the midaxillary line gave no fluid. *Lumbar punctures. November 9.* 10 c.c. of clear colorless fluid. No pellicle formed. Hydrodynamics normal. Rapid rise and fall. Alcohol, globulin, Wassermann and gold solution negative. 3 cells. Total protein 100. Sugar 0.047. *November 18.* 25 c.c. of slightly opalescent colorless fluid. Hydrodynamics normal. 250 cells, large mononuclears (large cells with pseudopodic processes) 60%, lymphocytes 39%, polynuclears 1%. Alcohol and ammonium sulphate strongly positive. Wassermann negative. Total protein 211. Gold solution negative. Sugar 0.0295. No pellicle formed. No tb. found. *X-ray.* See illustration.





Orders. November 9. Soft solids. Force fluids. Individual precautions. Codeia gr. ss with veronal gr. x at 8 p.m. November 10. Aspirin gr. x, repeat every hour for three doses p.r.n. Veronal gr. x. November 12. Rectal taps, 5% glucose ℥ vi every six hours. Later orders only for morphia in 1/6 grain doses once a day to every three hours p.r.n.

The patient had no frequency and urinated only once during the first three nights. He was very ill and dehydrated. November 14 he vomited. November 18 he was much worse, seemed irrational, and did not answer questions or obey commands. The pupils did not react to light. There was definite bilateral Kernig, Oppenheim and Gordon, and paresthesia of the soles of the feet. He became delirious. November 22 he was much worse, with Cheyne-Stokes respiration. The following day he died.

DISCUSSION

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

I do not think that sensation during the chest tap has any necessary bearing on his mental condition.

We take it that he has had ten months of cough. This is a very skillfully written history, showing the gradual increase of obvious cardiac symptoms which at the first one did not think of. Yet prior to reading the physical examination I believe that his cough was cardiac from the start. It is a point Dr. Lord has emphasized here a great many times, that most chronic coughs of old men turn out to be heart trouble rather than lung trouble.

Then aside from that we have this queer thing about the xiphoid. I do not see that we can make much of the "fluttering"; we have to concentrate our attention upon the pain. The fluttering may have been fibrillation perhaps, but we cannot tell without the kind of questioning which we shall never have the opportunity to give. This sort of pain perhaps suggests coronary disease more than pain in the usual site of angina. Coronary block or infarct is the suggestion I get. Later there is a more typical suggestion of angina in the sensation when he moves suddenly. So I am inclined to begin the physical examination with the idea that this is a cardiac case in a man with arteriosclerosis.

NOTES ON THE PHYSICAL EXAMINATION

Presumably the evidences of fluid are on the side where he has been tapped before, on the right, where hydrothorax is more apt to accumulate. We may be wrong about that, but it seems to me the evidence is more to the effect of its being dropsical. The flattening in the right back is perhaps due to the stiffening of his chest which we used to call emphysema.

The abdominal tenderness and spasm were presumably due to the liver.

I do not know that we have anything in the history to explain the coarse tremor of the hands and tongue.

The chart shows a getting over one spasm of fever and getting into another at the end, the pulse following along. On the whole the pulse was not high most of the time.

There is nothing in the urine or blood examination that helps me in diagnosis.

The bloody fluid obtained on tapping was I suppose from the liver. Probably no harm was done; it may have relieved his liver.

An Interne: It was mostly novocain; there was not much blood.

Dr. Cabot: It may have been just from the puncture then. They did not get anything in either place, back or side; that is surprising.

Diaphragm high on both sides, higher on the left. Outline a little irregular. Very fine mottled dullness throughout both lung fields. Changes most marked around the hilus of the left lung and in the left midchest, where the shadows apparently fuse, forming a rather irregular dense shadow. No evidence of an old tuberculous process at either apex.

There was nothing at all interesting in the first spinal tap, no evidence of meningitis. On the 18th they got something more interesting. Then we have the evidence of meningitis,—meningeal irritation the second time, not the first.

A Physician: He had a high protein at the first.

Dr. Cabot: Yes, but that alone I do not think would make us think of any particular process.

Will Dr. Merrill demonstrate the x-rays for us?

Dr. Merrill: The first thing noticed is the inequality in the height of the diaphragm, which may mean one of two things, either a lack of expansion of the chest in the side where it is high, or in cases where the left is higher it is sometimes merely pushed up by a large amount of gas in the stomach. Here however we see no bright area suggesting a large gas bubble in the fundus of the stomach, so we presume the diaphragm is high on that side because the lung is not expanding so much as on the right. Nothing is said about the diaphragmatic excursion, so we shall have to suppose it was limited, probably more on the left because of the non-expansion of that side of the chest.

Dr. Cabot: Does that right show any evidence of adhesions?

Dr. Merrill: No. There is a little irregularity on the surface, but those are not uncommon and do not necessarily mean adhesions. If we see a spot on the diaphragm and it hangs up there and does not come down when the diaphragm is lowered by inspiration, that may be more significant. Just from what we see on this plate that does not necessarily mean adhesions. The lungs show, as we see here, extensive fine mottling of both sides, most marked about the hilus of the left lung and in the left mid-chest, where the shadows form an irregular area of increased dullness. It has however no sharp outline to it as we might expect from a pneumonic area or lung abscess or anything else that might cause a localized area of dullness in the lung. It simply means that the condition is more intense and more closely associated in this portion of the lung than in the other, although it is part of the same process, which simply means that scattered through both lung fields are small, almost pin-point areas of increased density in the lung itself. These might be due to one of several conditions. It is essentially a miliary condition. It might be small miliary abscess formation, it might be miliary tuberculosis; it is possible that it might be dust, pneumoconiosis. So far as we see it the condition is a miliary pathological one scattered throughout both lung fields. We differentiate it from bronchopneumonia by its fine disseminated appearance. It is not patchy; it has no large areas of consolidation like pneumonia or abscess. Both costophrenic angles, which we see here in spite of the fact that he has had a pleural effusion, show no dullness or obscurities. So I should think from the picture that the two most probable conditions which would give this appearance would be miliary tuberculosis or a septic process.

Dr. Cabot: Would it be possible for the heart by passive congestion alone to cause that picture?

Dr. Merrill: Passive congestion does produce a rather characteristic picture in the lung field. It is characterized by a rather widespread fine mottling, but it is more liable to follow the bronchial distribution and it is not characteristically composed of little round spots. It might produce a picture very similar to this, but in this chest, taken at the distance a chest picture is taken and allowing for the normal exaggeration of the heart shadow, we see nothing abnormal in the heart shadow or outline to make us think of that. The heart looks too normal to make us think of passive congestion.

Dr. Cabot: It is an enormously interesting plate, I think. It turns my ideas right around. I started out with the idea that this was heart and not lung trouble after reading the history. I do not know what else but the plate would have taught us our error. Of course the tap of the spinal cord began to show us something that the heart could not account for. But it seems to me a very brilliant exposition, if it turns out as Dr. Merrill has said, of what x-ray can do for us and what nothing else in our resources can do.

A Physician: Why isn't the history perfectly consistent with tuberculosis? How can you say it is more cardiac than tuberculous?

Dr. Cabot: I dare say you are right about that. Perhaps I was prejudiced by the account of these symptoms at the xiphoid, which do not sound pulmonary and do sound cardiac.

A Physician: Don't you often get gastric distress, etc., in pulmonary disease?

Dr. Cabot: I do not remember an attack like this. It is generally a chronic affair, more like hyperacidity or ulcer.

An Interne: One thing the history does not mention; that the patient was lying flat in bed.

Dr. Cabot: Yes, that should be put in. Also that there is no arrhythmia. I suppose, looking back, I ought to say that fluid was pleurisy, not dropsy. I interpreted that wrongly as heart trouble. I think now it is evidence of lung trouble.

He had no special treatment that throws any light on the diagnosis. It was treatment intended to keep him comfortable. Just why he was dehydrated we do not see from anything that is stated.

DIFFERENTIAL DIAGNOSIS

We have evidence pointing to two groups of lesions, in the lungs and in the spinal cord. I know but one diagnosis or one disease that will join those two. We have either to say that cord tap was wrong—that there really was not anything in it—or if we take it seriously, as I think we must, we have to say chronic meningitis. I know of but one type of meningitis that links itself up with pulmonary symptoms, and that is tuberculous. We may have syphilitic or epidemic meningitis, but nobody has ever said that they link themselves up with anything in the lung. Leaning very heavily, as I do, on this x-ray plate, I do not see how we can make any diagnosis save miliary tuberculosis.

If he did not have miliary tuberculosis one might say we can explain these brain symptoms by the fact that he is so near his death. But with the diagnosis of miliary tuberculosis in mind it seems to me natural to say his brain lesion caused them. Very interesting to me is the suggestion that trauma influenced the spinal meningitis; that the disease spread to the spinal cord between the first tap and the second. One speculates, and must, whether the first tap had anything to do with localizing the tuberculosis there. We hear that if you hit a man over the knee and he has tuberculosis in his system he will get tuberculosis where the trauma occurred. That is, that we cannot by trauma produce tuberculosis, but can localize it. He had high protein at the time of the first tap. My guess is that he was going to have a meningitis anyway and that the trauma did not produce it. But I do not see how we can prove that.

Looking back I suppose we may say his "influenza" attack of ten months ago was probably connected with his tuberculosis and that he has had it ever since. Yet if we say that, it is hard to say why there are not more chronic lesions in the lung. As I look at the plate it is hard to say that any of the lesions have been there a long time. How about that, Dr. Merrill? How about this place in the middle of the left lung?

Dr. Merrill: With the story that his previous trouble was on the right side of his chest that place on the left probably is not significant.

Dr. Cabot: Of course we do not know enough to speculate how long this thing has been going on.

Other than tuberculosis what can it be? Dr. Merrill has mentioned pneumoconiosis chiefly from an academic point of view. He does not really think it can be there in a man who has no history and no exposure. We do not need to consider it. I have never seen bronchopneumonia do any such thing. I have never seen malignant disease do any such thing. Am I right about that?

Dr. Merrill: Ordinarily, no. I have seen a few similar cases of malignant disease supposed but not proved.

Dr. Cabot: There is nothing in the history to suggest malignant disease. If it was malignant disease it would be secondary in the lungs, not primary, and we have no suggestion of any focus. I have spoken of syphilis, but we have nothing to indicate that.

So I believe he had miliary tuberculosis, including the lung, brain and cord, and probably the liver, spleen, kidneys, etc., although we have no evidence of that.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Miliary tuberculosis.
Tuberculous meningitis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Miliary tuberculosis of the lungs, brain, spinal cord, liver, spleen, kidneys.
Tuberculous meningitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Chronic tuberculosis of the apex of the right lung.
Miliary tuberculosis of the lungs, liver, spleen and kidneys.
Tuberculous meningitis.

2. *Historical landmarks*

Meckel's diverticulum.
Chronic pleuritis, right.

Dr. Richardson: The tuberculosis in this case manifested itself as tuberculous meningitis and miliary tuberculosis of the lungs, liver, spleen, and rather well marked in the kidneys. The mesenteric and retroperitoneal glands were negative. There was a focus of tuberculosis in one of the bronchial glands and an area of chronic tuberculosis in the apical region of the right lung.

The heart weighed 365 grams and was frankly negative. The aorta and great branches were frankly negative. The coronaries were capacious and free.

The gall-bladder, bile ducts, pancreas, and adrenals were negative, as also were the prostate, seminal vesicles and testes.

Culture from the heart blood showed no growth.

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CASE 10072

A Canadian widow of fifty-nine, a practical nurse, was brought to the Emergency Ward November 8 in stupor. The history was given by her daughter and granddaughter. The complaints were of pain in the chest, cough and stupor.

F. H. One sister died of tuberculosis. One daughter died of "growth on the liver." No other causes of death were known.

Habits. In the course of her work she often went without sleep. She had probably had little sleep during the past three months.

P. H. She had always been very active and had worked hard. Five years ago she had pneumonia. Thirteen months ago she had a lump on her chest with suffocation. A physician said she had high blood pressure and a bad heart. She was given ten minutes to live. She was also given strychnin capsules to break and inhale. She had often had suffocating attacks. Two months before admission she had pleurisy (?).

P. I. November 3, after leaving a case, she was tired, had pains all over, did not feel well, and felt that she had another attack of pleurisy. November 4 she stayed in bed because she felt unable to get up. Next day she developed a cough with hemoptysis and occasional white foamy sputum. Since the onset she had had alternate feelings of cold and heat with suffocation. November 6 she developed severe pain in her right side. A doctor gave her two prescriptions for both of which the person who had them filled had to sign. The apothecary said that the capsules were "to deaden the pain" and the liquid was "a cough medicine." He also said the prescription would not be refilled without duplicates from the physician. The first capsule was given the night of November 7 and the second the morning of admission. The third had not been given. The cough medicine was given every two hours. At four o'clock, after eating fairly heartily, the patient became stuporous and could not be aroused.

P. E. The examination was not complete because of her condition. A sick looking elderly woman in a stupor from which she could not be roused. Slight cyanosis. Respirations slow, somewhat spasmodic, with expiratory grunt. Apex impulse of the *heart* not recorded. No enlargement to percussion. Sounds of good quality. Action slow, absolutely irregular. A soft systolic murmur at the apex. *B.P.* 150/90. *Electrocardiogram.* Auricular premature beats, usually every second or third beat. Rate 110-120. T_2 inverted. Left axis deviation. Index + 35. *Lungs.* Marked dullness, loud bronchial breathing, medium and coarse crackling râles, increased spoken voice and tactile fremitus at the right apex in front to the third rib, less in the back. Scattered râles below the angles of the scapulae. *Abdomen, extremities, pupils* and *reflexes* normal. *Genitals* not examined.

T. 101.5°-104° by rectum. *P.* 52-120. *R.* 36-26. *Urine* not recorded. *Blood.* Hgb. not recorded, leucocytes 32,000, polynuclears 93 per cent., many young forms. Platelets almost absent. Red blood cells full of hemoglobin, but showed great variation in size with many microcytes, no poikilocytes. *Wassermann* not recorded. No *sputum* obtained.

Orders. November 8. Digifolin gr. ii intravenously and gr. ss intramuscularly. Caffein gr. x intravenously. All given in the emergency ward. Individual precautions. Force fluids. Soapsuds enema in the morning if condition permits. Morphia gr. 1/8 every six hours p.r.n. (Not given.) Caffein sodium salicylate gr. x intramuscularly p.r.n. for respiratory failure. November 9. Caffein sodium salicylate gr. v intramuscularly every three hours until respirations are better. Pituitrin 1 c.c. intramuscularly. Turpentine stupes every four hours p.r.n. for distention. Atropin gr. 1/100 s.c. Caffein gr. x intramuscularly every four hours p.r.n. for respiratory failure.

November 9 the patient had the spasmodic type of respiration. Her pupils were contracted to pin head size. She still could not be roused. The signs in the chest appeared to be extending. The upper part of the right lower and right middle lobe showed signs of consolidation with bronchial breathing and voice, a few consonating râles and fremitus. Enemata were not retained. The patient was incontinent. That night the respiration was worse in spite of caffein. Both sphincters were relaxed. The bowels had not moved. The distention was pronounced and was not reduced by turpentine stupes or pituitrin. Just after midnight she died.

DISCUSSION

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

A woman of fifty-nine found in stupor brings to mind at once the commonest of all causes of coma in persons of this age, namely cerebral hemorrhage or its equivalent in other vascular accidents. As the patient is a nurse one also is forced to remember that many nurses, like many physicians, get the morphin habit, and that an overdose of morphin is a possible cause of stupor, though in fact those who are habituated to it seldom get this particular effect from it.

As we read on, however, and find that there is cough and pain in the chest as well as stupor, it becomes more probable that the unconsciousness is part of the manifestations of an infectious disease, and very possibly of a respiratory infection.

Since one sister died of tuberculosis one wonders whether the respiratory infection here in question may be tuberculosis. From the facts given us we do not know whether this patient was actually exposed to tuberculosis or not.

In point of fact, however, the acuteness of the symptoms in this case, the fact that the patient has been ill only five days, make it rather improbable that so chronic a disease as tuberculosis is present. Tuberculosis can begin acutely and deprive the patient of life within a few days, but this is unusual.

There are some other points about her past history which we should speculate upon. What history which we should speculate upon. What have been? Aneurism of course comes to our mind, but with no trace of any such thing at the present time and with no evidence that her physician considered aneurism it seems to me more probable that there was no lump of any size there and that the patient's phraseology has misled us. Patients discover certain prominences in their persons now and then and are very much surprised at their presence, believing them to be due to recent disease, when in fact they have long been there and belong there.

More important in the past history is the account of high blood pressure with poor heart action. If that was true in the past she probably has some hypertrophy and dilatation of the heart at the present time.

What was the nature of the capsules which she was given to break and inhale? Certainly they were not strychnin capsules, as the record states. Probably they contained amyl nitrite.

Coming now to the present illness we have an acute onset of a respiratory infection, with chest pain, cough, hemoptysis and fever. So far it sounds like an ordinary pneumonia. The onset of stupor, however, is a surprising feature of the case if it is pneumonia, and it is for this reason that the inquiries about the two capsules are instituted. Since they were given to deaden pain there is every reason to suppose that they contained morphin. It is not likely, however, that they contained enough so that two of them, spaced as these have been, could have accounted for the patient's coma. Possibly the cough medicine also contained morphin. This has been given more frequently, but the ordinary traditions of the medical profession seem to me to make it unlikely that there was morphin both in the capsules and in the cough medicine. There may have been codeia in the latter, but this also I should think was rather improbable. On the whole then I incline to think that the stupor must have been due to the same cause as the other apparently infectious symptoms, and has no particular relation to anything that she has taken as medicine.

NOTES ON THE PHYSICAL EXAMINATION

In the physical examination the outstanding and important fact is the evidence of solidification at the right apex. As described it might be due to tuberculosis or to pneumonia, but not to anything else in all probability. As the patient lived only one day in the hospital, with five days outside it since the beginning of this infection, it is distinctly improbable that tuberculosis is the cause. Pneumonia then, our first supposition, seems to be supported by more and more evidence as we go on through the account of the case. The irregularities of the heart are such as are often seen in pneumonia and do not point to any separate disease of that organ. And though the urine is not recorded we have no reason to suppose that it showed anything besides the results of the infection. The same is true of the blood.

The account of the last day of life adds nothing to make us change the impression just expressed.

DIFFERENTIAL DIAGNOSIS

As far as I see this patient must have died either of pneumonia or of pulmonary tuberculosis, and while the latter cannot be absolutely excluded there seems to me every reason for considering the former the most probable diagnosis.

I believe then that the necropsy will show extensive pneumonia of the right lung and very possibly some of the same disease in the left, though we have no positive evidence of that during life. The other organs should show the usual evidences of an acute infection, and the pleura should show an acute inflammation, very possibly with the accumulation of a fluid, serous or purulent, which did not make itself obvious in the physical examination. Purulent pleurisy is a particularly common complication in a case like this. I do not believe that the stupor was connected with any cause other than the pneumonia. Probably there will be some hypertrophy and dilatation of the heart, but there is no evidence of any further disease there, or on the whole any good evidence of aneurism.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Lobar pneumonia.
Hypertrophy and dilatation of the heart.
Acute pleuritis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Septicemia, pneumococcus.
Lobar pneumonia.

2. Secondary or terminal lesions

Arteriosclerosis.
Hypertrophy and dilatation of the heart.
Soft spleen.

3. Historical landmarks

Slight chronic pleuritis.
Chronic perihepatitis and splenitis.
Small polyp of the uterus.
Hydrosalpinx, left.
Obsolete tuberculosis of a bronchial gland.

Dr. Richardson: This case was that of a well developed and fairly well nourished woman.

The head was not examined.

The gastro-intestinal tract was negative except there were a few small smooth walled intact diverticula in the sigmoid colon.

The pleural cavities were empty. There were a few old pleural adhesions on each side. The trachea and bronchi contained much mucopurulent material and the mucosa showed dirty reddish discoloration. The bronchial glands were moderately enlarged, pigmented and generally soft and juicy. One of the glands, however, at the bifurcation of the trachea showed fibrocalcareous degeneration, obsolete tuberculosis.

The upper lobe of the right lung was voluminous, solid, and coated with fibrinous exudate. The section surfaces were gray-red to gray, homogeneous, granular, and yielded much mucopurulent fluid material. The pneumonia involved the apex, which otherwise was negative. The middle lobe was rather voluminous, solid and showed gray-red to gray pneumonia. The lower lobe in the region of its upper part posteriorly over about one-third of its volume showed gray-red to gray pneumonia, and anteriorly a short distance below this there was a focus of gray-red pneumonia about four and one-half cm. in diameter. The tissue of the lobe elsewhere was purplish red, spongy, and yielded a small amount of thin reddish frothy fluid.

The apex of the left lung was negative. From a point about 4 cm. below the apex and down to the diaphragm the upper lobe was solid and showed gray-red to gray pneumonia. In the region of the middle portion of the lower lobe posteriorly to the left there was an area of gray-red pneumonia about 5-7 cm. The tissue of this lobe elsewhere was purplish red, spongy, and yielded a moderate amount of reddish frothy fluid.

The heart weighed 500 grams, considerably enlarged. The myocardium was of good consistence, pale brown-red, and showed no evidence of myocarditis. The cavities were of full size on the left and showed slight dilatation on the right. The mitral and aortic valves showed a moderate amount of the usual fibrosis, but the valves were otherwise negative. The coronaries were free, but showed scattered along the intima some fibrous sclerosis, without, however, any marked diminution of their lumina. The aorta and the great branches generally showed much fibrous sclerosis.

The liver weighed 1660 grams. The organ presented a few old adhesions to the diaphragm. The cut ends of the branches of the hepatic artery in the section surfaces showed fibrous sclerosis.

The spleen weighed 105 grams, rather small. The tissue was rather mushy. The organ presented a few old adhesions to the diaphragm.

The combined weight of the kidneys was 330 grams. The organs showed arteriosclerosis with some atrophy in places; no definite nephritis.

The uterus was rather small and presented a small polyp springing from the mucosa of the upper part of the uterine cavity. The tubes were negative except for a slight hydrosalpinx on the left. The ovaries showed fibroid atrophy.

Culture from the heart blood yielded a good growth of the pneumococcus.

A typical case of lobar pneumonia in an arteriosclerotic.

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CASE 10073

An American painter of seventy-three entered December 11.

F. H. His mother died of "shock" at seventy-five. His wife had had two miscarriages and four children.

P. H. Fifteen years ago he was ill a week with grippe. Six years ago he had "rheumatism" for a short time in his left leg and hip, with complete recovery. He very rarely urinated at night.

Habits. Good.

P. I. Three weeks before admission while at work on a cold day, feeling perfectly well, he began to feel chilly. For two days he could not get warm. While talking with the doctor who came to see him he had sudden non-radiating pain in the epigastrium so severe that he fell off the chair. This lasted three minutes, then left as suddenly as it began, with no sequelae of any kind except vomiting. Usually three but sometimes seven hours after eating he felt nauseated and vomited his food in about the condition in which he ate it. His bowels, usually regular, had moved very little since the onset. The movements were rather loose and very dark, but not black. His voice had been of good quality until the onset of the present illness. Since then he had been very hoarse. His weight before the onset was 130 pounds.

P. E. An emaciated man showing considerable loss of weight (weight December 15 96 pounds), and talking in a high squeak or a whisper. Mucous membranes slightly pale. Teeth, a few rotten stumps, with pyorrhea. Mucosa of throat showed some atrophy, dry and reddened. Tongue dry, with a heavy white furry furrowed coat. Apex impulse of the *heart* not seen or felt. Left border of dullness just outside the nipple line. No enlargement to the right. Traube's space obliterated. Sounds very faint at the apex, where the first sound was sharp and heard as far down as the eighth rib, not heard toward the base. No sounds could be heard in the second interspace. No murmurs. Pulses of fair volume and tension. *B.P.* not recorded. *Lungs.* Nothing abnormal made out. *Abdomen* depressed, wrinkled, very soft. Visible pulsation half way between the umbilicus and the ensiform, where an indefinite mass three inches in diameter was made out, moving slightly with respiration, not tender but firm. Aorta easily palpable. On full inspiration pulsation in the mass could hardly be felt, although the femoral artery beat as before. On expiration pulsation in the mass was even more marked. *Genitals* normal. *Rectal examination.* Small firm prostate. *Extremities* and *pupils* normal. *Reflexes.* Knee-jerks lively. Plantars normal.

Before operation *T.* 96.7°-99°, *P.* 76-88, *R.* normal; *urine* ℥ 11-27, sp. gr. 1.021-1.022, a slight trace of albumin at one of two examinations, acetone present at four of five tests, strongly positive at three, diacetic acid present at one of four tests; *blood,* hgb. 90%, leucocytes 26,000, polynuclears 93%. *Stomach examination. Fasting contents.* 10 c.c. of brown-tinged cloudy sour fluid. No free HCl. Guaiac negative. *Test meal.* 20 c.c. of bread and thick mucus. No free HCl. Total acid 0. Guaiac negative.

A stomach tube passed about twenty-five inches down met a definite obstruction. Water poured into the tube welled up immediately into the patient's mouth and continued until the whole amount was regurgitated. The stomach tube was then pushed farther down and seemed to pass through the obstruction. Then about two quarts of water was poured in with ease and none was regurgitated. A pint of milk was poured in. During the entire day after this the patient vomited this milky fluid, about a pint at a time, once streaked with blood. He retained almost nothing, usually regurgitating food immediately after eating. His appetite was good. The patient's doctor said that the patient was strong and in perfect health before the sudden onset of the present illness. The patient had been taking bismuth for two weeks. It appeared in his stools. He remained surprisingly strong. He absorbed one to three quarts of 8% dextrose solution daily by rectal seepage. There was marked improvement after this was started. X-ray showed a definite shadow in the stomach. After one hour no bismuth had left the stomach. No cause for the obstruction to the passage of the tube at twenty-five inches was found. The disappearance of acetone and diacetic reactions under rectal feeding was striking.

December 21 operation was done. The pain was less after it. The patient took a considerable amount of nourishment. The abdomen was slightly distended, but soft and non-tender. The general condition however became worse. December 25 he died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

The story of the present illness is very striking in its abrupt onset. It seems hard for us to believe that he had no symptoms until three weeks ago, and then had as marked a story of pyloric obstruction as he gave us here.

In spite of the occupation to which he belonged lead colic does not seem to fit. An organic lesion in the stomach near the pylorus seems to be the diagnosis that we are forced to consider very seriously. If he has lost thirty-four pounds in three weeks it certainly has been a very acute illness. Is it possible that the pain which he felt on talking with the doctor was a perforation of an old ulcer which immediately walled off with the formation of an abscess and pressure obstruction from that? Considering the fact that he has gone for three weeks since the pain and comes in with a movable mass and practically no temperature that condition seems hard to believe. The evidence that we have from the examination of the stomach contents and from the x-ray is very much in favor of a carcinoma in the stomach. The acid poisoning from starvation from which he was suffering when he entered was relieved, and when he was got into the best possible condition operation was done.

In spite of the extremely short story I think we are forced to make a diagnosis of probable carcinoma of the stomach, our second choice being an old ulcer which has suddenly begun to make trouble.

A PHYSICIAN: Might not the sudden onset suggest obstruction by aneurism?

A SURGEON: What about adhesions?

DR. YOUNG: Adhesions would have to be part of the abscess, as adhesions forming in three weeks without some cause like abscess would be out of the question. As for aneurism, in spite of the description here I should think it very improbable, as the stomach is not a fixed organ, and it would seem to me mechanically impossible for an aneurism to obstruct the pylorus.

I think their description of pulsation in the mass was rather indefinite and based on desire rather than any certain sensation. I think there is one condition left which we cannot absolutely rule out, and that is pyloric spasm from an irritation which possibly could come from aneurism.

There is no record here that x-ray was done after the use of atropin. This I think is always valuable when pyloric obstruction without a definite cause is shown to exist.

I think I will leave my diagnosis as I made it, cancer first, ulcer with walled off perforation second, and spasm from some unknown irritant third.

PRE-OPERATIVE DIAGNOSIS

Pyloric obstruction—cause?

DR. EDWARD L. YOUNG'S DIAGNOSIS

(1) Carcinoma of stomach.
(2) Gastric ulcer with subacute perforation.
(3) Spasm due to some unknown irritant.

OPERATION

Ether. Four-inch median incision above umbilicus. Exploration of right upper quadrant revealed a hard spool-shaped mass in the stomach. The lumen through the mass was about the size of a lead pencil. The mass did not involve the pylorus. The liver appeared to be full of metastases; white raised nodules were visible on the under surface. The lower part of the stomach was brought out of the wound together with a loop of jejunum. A posterior short loop gastro-enterostomy was done. A small piece of the growth was removed for pathological examination.

PATHOLOGICAL REPORT

A minute fragment of tissue showing upon microscopical examination some unstriped muscular fiber among which were plexiform masses of epithelial-like cells.

Cancer.

W. F. WHITNEY.

FURTHER DISCUSSION

The findings are interesting in showing the length of time a patient can have a condition like this without any symptoms. I should assume from the description that there was nothing to show for death except that the operation was a little more than he could stand in his weakened condition. Of course we must remember that peritonitis or pneumonia may always be present in a post-operative case, especially in a person of this age, without any clinical signs.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of the stomach.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Carcinoma of the stomach.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Adenocarcinoma of the pylorus with ulceration and perforation.
Metastases in the liver and a retroperitoneal lymphatic gland.

2. *Secondary or terminal lesions*

Operation wound for gastroenterostomy.
Septicemia, streptococcus.
Fibrinopurulent peritonitis.
Arteriosclerosis of the coronary arteries.
Slight fibrous arteriosclerosis of the aorta and its great branches.

3. *Historical landmarks*

Cyst of the kidney.

DR. RICHARDSON: The examination was made through an operation wound in the anterior abdominal wall. The head was not examined.

The peritoneal cavity in the region of the right flank and the pelvis contained a moderate amount of thick purulent fluid material, and fibrinopurulent material coated the peritoneum in the regions mentioned and extended up over the liver and along the region of the junction of the stomach and duodenum.

The pleural cavities were empty, and the lungs showed nothing for record except that there was a moderate amount of emphysema in their peripheral portions.

The heart showed nothing for record. The coronary arteries showed here and there areas of fibrous sclerosis, with fibrocalcareous change in the first portion of the left coronary. The aorta and its great branches showed only a very slight amount of fibrous sclerosis.

The liver just beneath the capsule of the inferior surface, a little to the left of the gallbladder, presented a mass of new growth tissue two cm. in diameter.

An anastomosis was well established between the first portion of the jejunum and the stomach by the posterior route. It was in good condition. The stomach otherwise was negative until the region of the pylorus was reached. Here the pyloric ridge was represented by a thick circular rounded ridge-like mass 2 by 2½ cm. in thickness. Section through this mass showed loss of the normal markings and infiltration with dense grayish-white homogeneous new-growth-like tissue. At one point in the region of the new growth there was a deep loss of substance extending along the anterior wall, across to the left side, and along the greater curvature.

The ulceration was about 7 cm. by 5 cm. Its peripheral portions were elevated and overhung. The floor of the ulcer generally was denuded of mucosa. The wall in this situation was thin, membranous-like, and consisted apparently of thickened peritoneum and the wall in the region of the muscular coat. At a point in the wall of this ulcer, antero-laterally to the right, there was a minute perforation. The peritoneum over the stomach in this region and that of the adjoining duodenum was coated with fibrinopurulent exudate. In the situation of the retroperitoneal glands in this neighborhood there was one enlarged gland about 2 cm. in greatest dimension which showed infiltration with new growth tissue.

A culture from the spleen yielded a growth of streptococci. The microscopical examination showed the new growth to be typical adenocarcinoma.

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COMPENSATION FOR OCCUPATIONAL DISEASES

In New York State the law provides for compensation for occupational diseases as set forth in the bulletin of the Department of Health, as follows:

Par. 3, Subdivision 2. Occupational Diseases. Compensation shall be payable for disabilities sustained or death incurred by an employee resulting from the following occupational diseases.

Column 1

Description of Diseases

1. Anthrax.
2. Zinc poisoning or its sequelae.
3. Zinc poisoning or its sequelae.
4. Mercury poisoning or its sequelae.
5. Phosphorus poisoning or its sequelae.
6. Arsenic poisoning or its sequelae.
7. Poisoning by wood alcohol.
8. Poisoning by nitro-, hydro-, and amido-derivatives of benzene (dinitro-benzol, anilin, and others), or by its sequelae.
9. Poisoning by carbon bisulphide or its sequelae.
10. Poisoning by nitrous fumes or its sequelae.
11. Poisoning by nickel carbonyl or its sequelae.
12. Dope poisoning (poisoning by tetrachlormethane or any substance used as or in conjunction with a solvent for acetate of cellulose) or its sequelae.
13. Poisoning by formaldehyde and its preparations.
14. Chrome ulceration or its sequelae.
15. Epitheliomatous cancer or ulceration of the skin or of the corneal surface of the eye, due to tar, pitch, bitumen, mineral oil or paraffin, or any compound, product or residue of any of these substances.
16. Glanders.
17. Compressed air illness or its sequelae.
18. Miners' diseases, including only cellulitis, bursitis, ankylostomiasis, tenosynovitis and nystagmus.
19. Cataract in glassworkers.

Column 2

Description of Process

1. Handling of wool, hair, bristles, hides or skins.

2. Any process involving the use of lead or its preparations or compounds.

3. Any process involving the use of zinc or its preparations or compounds or alloys.

4. Any process involving the use of mercury or its preparations or compounds.

After the tumule and the shouting has died, phorus or its preparations or compounds.

6. Any process involving the use of arsenic or its preparations or compounds.

7. Any process involving the use of wood alcohol or any preparation containing wood alcohol.

8. Any process involving the use of a nitro-, hydro- or amido-derivative of benzene or its preparations or compounds.

9. Any process involving the use of carbon bisulphide or its preparations or compounds.

10. Any process in which nitrous fumes are evolved.

11. Any process in which nickel carbonyl gas is evolved.

12. Any process involving the use of any substance used as or in conjunction with a solvent for acetate of cellulose.

13. Any process involving the use of formaldehyde and its preparations.

14. Any process involving the use of chromic acid or bichromate of ammonium, potassium, or sodium, or their preparations.

15. Handling or use of tar, pitch, bitumen, mineral oil, or paraffin or any compound, product or residue of any of these substances.

16. Care or handling of any equine animal or the carcass of any such animal.

17. Any process carried on in compressed air.

18. Any process involving mining.

19. Processes in the manufacture of glass involving exposure to the glare of molten glass.

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COMMON SENSE APPLIED

An unfortunate result has recently occurred following the administration of toxin-antitoxin to a group of children. Since the confusion has cleared and the rumors have been dispelled, it has been found that no fatalities or serious sequelae have resulted. The matter has been thoroughly investigated by men well qualified in immunology, and the State Department of Public Health has shown its usual efficiency in hunting down the cause of the accident in which a number of children have been made unpleasantly ill by the injection of this biologic product.

The consensus of opinion seems to be that this lot of toxin-antitoxin had become frozen since leaving the Laboratory, where it had passed the usual tests of safety, both of the State and of the Hygienic Laboratory in Washington. The factor of freezing appears to be the only abnormal factor introduced. The effect of freezing on proteins and their combinations is little understood, but there is evidence that they may be considerably changed. We are all familiar with the effect of frozen milk on the infant's digestive tract, an effect that cannot be wholly laid to the changed physical properties of the fat.

After the tumult and the shouting has died, certain facts remain. The physician administering the toxin-antitoxin and the State Department of Public Health producing it may be held blameless. Furthermore, the status of toxin-antitoxin as one of the greatest blessings that science has conferred on mankind remains unchanged. We will continue unhesitatingly to administer toxin-antitoxin to our own children, and to advise its use to others. The fact that a certain lot of toxin-antitoxin, having been frozen, had become toxic will serve only to impress upon us the fact that it should not be allowed to freeze. The fact that a sterile instrument, becoming septic, will infect a wound will have as its effect only an increased vigilance in keeping it sterile.

Certain societies of anti-health crusaders will, of course, seize upon this incident as an argument against all biologic therapy. We will, however, continue to exercise our own judgment as we have exercised it in the past; we will continue to use and to advocate the use of our state biologic products, and we will continue our active support of the campaign against diphtheria and of the men who have conceived it and are carrying it on to its logical conclusion.

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STUDYING METHUSELAH

All the forces of the study of medicine, medical investigation and medical practice are directed toward the achievement of two ends: to prevent and cure disease, or, in other words, to increase the well-being of the individuals making up society during their terms of life; and to prevent untimely death, or to increase the duration of individual and mass life. These are the main aims of medicine; there are practically no others except, as a side issue, the desire to see all conceptions bear the fruit of living, healthy offspring.

The acquisition of longevity with health and activity is the general aim of all healthy-bodied and healthy-minded persons. How can this be obtained? Obviously the prevention and cure of disease is one method, which, as we know, has been applied more and more successfully during the last century, as is evidenced by a gradual extension of the average span of life. A newer method which may prove of value is the analysis of statistical material gathered from the lives of many persons who have gathered to their credit an unusual number of years; persons who "may be regarded as, in some sense, experts in the art of living."

Such interesting work has been undertaken by Raymond Pearl of the Department of Biometry and Vital Statistics of the School of Hygiene of Johns Hopkins University, and reported in its preliminary phase in the *Journal of the American Medical Association* (82: 259, January 26, 1924).

The method employed is simple. A questionnaire was prepared asking for all available data which might bear on the longevity of the individual, such as heredity, previous health, general activities, use of alcohol, tobacco, etc. This questionnaire was sent to persons mentioned in the press as having acquired the dignified age of 95 years or over. Two years' experience demonstrated beyond question the value of the plan. At least one-third of those questioned replied, and it was evident from their answers that they had replied with painstaking honesty.

Fifty-one cases—a small group, to be sure—have been analyzed and made the subject of this preliminary report. From these cases it seems apparent that the use of alcohol and tobacco have little if any effect on longevity, if not used in excess, for of the fifty-one, twenty had used alcohol during their lives, and fourteen had used tobacco. The absolute fertility of the group is high, more than the average number of children having been born to them, the proportion being somewhat higher among the alcohol cases than among the abstainers. In analyzing the siblings it was found that the brothers of these long-lived persons lived on the average at least 17 1/3 years longer than the general population male, and the sisters 9.28 years longer than the general population female. The duration of life of parents, as might be expected, was much above the average.

The practical value of these statistics and the possibility of the application to the general population of factors apparently governing longevity must remain in doubt until far more extensive studies have been pursued. Certainly the very definite possibility of future benefits to be derived from such studies must be recognized.

NOTES FROM THE COUNCIL MEETING, FEBRUARY 6, 1924

After the reading of the records the President paid a tribute to Dr. H. A. Suitor, formerly President of the Franklin District. He called the members to their feet as a mark of respect for the dead ex-President, Woodrow Wilson, and a tribute to the example set by Dr. Grayson, after which he made a brief address as follows:

The American Medical Association is actively interested in a nation-wide movement this winter to bring home to our people the vital importance of respect, obedience and execution of law.

President Coolidge and Governor Cox ask all citizens to stand together on this platform.

Connecticut is now cleaning house in the enforcement of its Medical Practice Act.

Led by prominent judges, the State of Connecticut is the bright star among the States on the Atlantic coast in obedience to and enforcement of the Eighteenth Amendment.

Massachusetts is in bad company. She stands with New York and Maryland, the only States refusing to enact enforcement laws. Governor Cox said recently in Symphony Hall: "The law officers of Massachusetts are at a great disadvantage in the enforcement of the prohibition law. The Legislature of 1921 passed such an act, which I signed, but it was defeated at the polls in 1922. The Legislature of last year passed another act, simple and to the point. I signed the act, but it in turn has been held in abeyance by invoking the referendum.

"The act will be on the ballot next November, and in my judgment the true friends of strict enforcement will subordinate everything else to a concerted effort to secure the ratification of that law." Thirty-six States and 67 per cent. of our people were living under prohibition when the Eighteenth Amendment was ratified by Congress and became the law of the land.

Vast sums of money are joined with crime in a black conspiracy of lawlessness.

It is time for a show-down between the forces of anarchy and those of law and order.

I appeal with confidence to the members of the Council and through them to the Fellows of our Society to support President Coolidge, Governor Cox and the Legislature of Massachusetts in this great issue, and to uphold the honor of the old Bay State by ratifying the enforcement act in November.

The routine business was conducted with dispatch. The attendance was large, the discussions brief, and most of the recommendations of committees were endorsed.

Dr. Merrill of Pittsfield failed to secure the appropriation for the committee on publicity because the Council evidently did not care to appropriate money to be used by a committee without a definite program.

The belief in the necessity of more general publicity relating to matters affecting the relation of physicians and the people and various health problems is growing throughout the country. Whether any committee can put in definite language a program for this type of work is doubtful, for conditions often demand emergency action.

Many states are raising large sums of money to be used by committees, and leaving the details to the discretion of the committees.

We are confronted with the Chiropractic Bill before the Legislature. There is need of widespread publicity relating to this attempt to legalize the practice of this cult in Massachusetts. Since no representatives of the Society other than the Committee on Legislation and the Committee on Public Health are charged with any duty relating to publicity, it will devolve on the Committee on Legislation to conduct the defense when the Chiropractic Bill comes up. This defense should not be confined to legislative hearings, for the members of the Legislature may not form an accurate estimate of the wishes of the Electorate from the testimony submitted at hearings. This is only one illustration where a publicity committee could work in conjunction with others as well as along independent lines. It is quite probable that those who would have been willing to work on this committee are pleased to be relieved of arduous tasks. The recommendations were made because of the apparent need of work along this line.

The Committee of Arrangements secured approval of the plans for holding the annual meeting at the New Ocean House, Swampscott, but lost out on the recommendation for an evening banquet.

Boston with its attractions is discarded for a seaside hotel. This probably means the omission of clinical exercises, assuming, of course, that the sessions of both days are to be at Swampscott. It may be that the committee has other plans, which have not been made public.

The meeting will take place Friday and Saturday, June 6 and 7, because of the annual meetings of the American Medical Association the following week. Unfortunately, the members of the House of Delegates will have to leave Saturday afternoon.

The financial condition of the Society is gratifying, as shown by the report of the Treasurer.

Dr. Charles W. Eliot, Dr. W. W. Keen, and Dr. Benjamin White were elected to honorary fellowship in the Society.

The Secretary expects to have the Proceedings of the Council ready for publication February 28.

TEUTONIC EFFICIENCY

Appeals have been made, and answered, in this country on behalf of the suffering physicians of Germany. Such appeals have seldom lacked sympathetic response on this side of the water, for the call of humanity has always sounded above petty distinctions of race or color, creed or political differences. The part that German science played in launching that ill-fated attack on civilization nearly ten years ago has been disregarded by many when those scientists have seemed to be in want. It is claimed that science knows no political distinctions; it is the basis on which our aid is sought.

It is interesting to view in this light the attitude of German science towards the general use of "Bayer 205," a new and effective treatment for African sleeping sickness—if the recent report of the Associated Press can be credited. Apparently, the shoe fits only one foot, for we are now told that Germany holds the key to Central Africa in this remedy, and that unconditional restoration of Germany's colonies and pre-war rights is the price demanded by the German Colonial Society for the remedy.

Germany lost her colonies as the result of an unsuccessful and unprovoked attack that she made on the civilized world,—an attack that exceeded in ferocity all accepted rules of warfare. As a result of its failure, and under the terms of the treaty that Germany accepted, her colonies were taken from her. If the statements to which she is now credited are true, she is planning to attempt a colossal hold-up to regain that which she has justly lost.

We trust that the reports are not true, for it would be a factor acting against Germany's apparent desire to re-establish herself in the eyes of the world if she should attempt to make a precedent by which scientific discoveries of humanitarian value should become political levers.

CLASS LEGISLATION

The people of the United States, whose forefathers indicted King George in the Declaration of Independence with the words, "He has erected a multitude of new offices and sent hither swarms of officers to harass our people and eat out their substance," are today running after the very things that their forefathers ran away from, according to J. B. Beal in the *Midland Druggist and Pharmaceutical Review*.

The United States today is probably the most bureaucratic and the most governed nation in the world, if what we suspect is true, and the amount of legislation having as its ultimate end the limitation of personal freedom is growing by leaps and bounds. It is estimated that at the present time, of males old enough to hold a job one in forty-seven is in government employ, and at the present rate another score of years will see one adult in every ten holding public office and subsisting upon the taxes paid by the other nine.

The injustice in this system, we are told, is that this restricting legislation is imposed upon the unorganized majority by an organized minority; we know, from the experience of centuries, that legislation is not a universal cure for the evils of society, and that it is a long way from the written mandate to the accomplished fact; furthermore, those very classes of society who endeavor to obey this complexity of laws are the ones who would not abuse the liberties they seek to curtail, while the professional criminal pursues his way as before.

In regard to narcotic legislation, which is, after all, class legislation infringing upon the rights of the practitioner, as it stands at present, Beal writes:

"The medical profession and the drug trade have paid vast sums of money in special taxes to enforce the law, have been put to enormous trouble and expense in the keeping of stocks and records, thousands of innocent patients have been subjected to needless pain and expense, and apparently the most important result achieved has been to provide us with a record of such drugs as are properly used and incidentally to bring into existence an extensive and enormously profitable business in the clandestine distribution of such drugs."

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ORGANIZED PREVENTIVE MEDICINE AS APPLIED TO INDUSTRIAL GROUPS

DR. ARTHUR B. EMMONS, 2d, Director of Harvard Mercantile Health Work, has written interestingly on this phase of preventive medicine in *The Nation's Health*, January, 1924.

The Harvard Mercantile Health Work was organized three and one-half years ago by a group of merchants who furnished the budget, the Harvard Medical School supervising the study. The causes and correction for some of the losses of efficiency in industry are illuminating.

Improper seating was found to be a factor in fatigue production. To correct this factor a chair was found that had been designed by a committee for the Massachusetts Institute of Technology. The chief advantage of this "work chair" is that it supports the back even when the worker is leaning forward. Another postural defect, especially in women standing at their work, was found to be due to shoes which prevented the individual from standing without needless strain on feet and spine. Shoes were found to be badly fitted, especially as to length, often with excessively high heels, and of materials too light in weight and poorly shaped and aligned. Such shoes were replaced with carefully fitted "store shoes" and after several months considerable improvement was reported.

In the problem of sight three factors are at work—eyesight, light, and copy. Two people in every four needed correction of vision. The essentials of modern office lighting are sufficient illumination without glare and shadows. Daylight properly employed is best, with totally indirect lighting next. Copy, of course, should be legible.

A study of the problem of ventilation has shown that over-heating is the commonest fault. An ideal temperature of 68°, with air motion but without drafts, should be maintained. Of almost equal importance is the maintenance of a relative humidity of about 50 per cent.

The training and especially the personality of the store nurse is emphasized, and her effectiveness is greatly increased by administrative understanding and executive ability.

Figures submitted by various stores show that for $5.00 per person per year a fairly complete service can be organized.

Dr. Emmons has amply demonstrated the value of one phase of preventive medicine, the medicine of the future.

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TEMPORARY IMMUNITY FROM MEASLES

THE Department of Health of the City of New York has adopted the use of serum of persons convalescent from measles in the hospital for contagious diseases among those persons who have been exposed to this disease. The results have been so favorable that measures for the general use of the serum are being provided. It is claimed that the serum is "almost always effective" if given within four days after exposure. Even up to six days the serum may prevent the development of the disease or moderate its severity.

The supply is, of course, limited and therefore the serum will be distributed for use only among children under three years of age.

This limitation is because of the greater danger to children under three years of age, for the complicating pneumonia so common in this group is the cause of the mortality to a large extent. The blood from which the serum is taken is obtained from healthy convalescent donors eight days or more after the development of the measles rash. The period of protection has not been demonstrated.

This treatment has been used by Dr. Place in the South Department of the Boston City Hospital, but the difficulties attending the production of this serum on a large scale will prevent its general distribution.

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Legislative Matters

THE MIDWIFE QUESTION

A BILL is before the Legislature which if enacted into law will legalize the work of the midwife. Committee hearings were held February 5. The bill is endorsed by a group of people in Springfield, by the Massachusetts Civic League, and by a considerable number of people in other parts of the State.

The combined legislative committee of the Massachusetts Medical and the Massachusetts Homeopathic Medical Societies do not approve this bill.

Several States have recognized midwives as competent to care for parturient women. The arguments in favor of midwives are based on the wishes of a considerable number of people who have come to this country from localities abroad, where maternity work is conducted to a considerable extent by midwives, the desire of some physicians to be relieved of the care of these cases, the belief entertained by some that statistics of obstetrical work as practiced by midwives show a lower mortality than similar work done by physicians, and the contention of some officials concerned in statistical work that midwives can be made to send in birth returns more promptly. If these contentions are sound in any particular, they would seem to show that adequate provision for the care of maternity cases by physicians has not been provided, or that a proportion of obstetrical practice is not sufficiently well done. We are inclined to believe that there may be some truth in the contentions, that at times some parturient women have been justified in feeling that some physicians were not ready to care for all such patients, but that has been found to apply to other cases needing medical treatment. It would certainly be gratifying if hospitals could be provided in those congested centers near to the homes of women about to be confined and manned by competent practitioners.

We are not prepared to accept the reasoning that a woman's life is safer in the hands of the average midwife than when she is under the supervision of the average doctor.

Statistics are often misleading, and may be so in these reports, for a certificate of death would often be signed by a physician in attendance after complications had arisen under the midwife's supervision. The great argument against the midwife as we see it is, that pregnancy and childbirth may demand the best possible medical skill much beyond the capacity of the midwife and that a midwife law is an uncalled-for compromise. If there is any failure in adequate provisions for care, efforts should be made to remedy that if possible. We do not feel that the toxemia of pregnancy, sepsis, or the accidents of childbirth will be lessened by midwife care. Even if there are fewer cases of death reported by midwives, as contended, there are certain very apparent factors that may enter into the statistics.

We imagine that even the midwives' supporters would be dumbfounded if it should be proposed to place these persons in charge of the service of a large lying-in hospital.

We doubt the wisdom of the compromise, especially in the bill now before the Legislature, which makes no provision for care during pregnancy. It is unwise in this day to lead the people to believe that the midwife attending the patient during delivery and a short period afterward, is meeting the responsibilities of present-day practice, which should begin with the pregnancy and only terminate after mother and child are both in normal condition.

If physicians feel any responsibility relating to this question, conference with the members of the Legislature with the request that information be conveyed to the committee is in order.

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FOR AND AGAINST VACCINATION

COMMITTEE hearings were conducted February 6.

The Medical Liberty League advocated doing away with compulsory vaccinations in one bill and prohibition of the use of virus of smallpox origin in another. Dr. S. B. Woodward's bill for the extension of requirements for vaccination to private schools was also heard.

The anti-vaccination bills were supported by representatives of the Medical Liberty League, Inc. Nothing new was brought out, and there was an omission of much testimony used in former years relating to the alleged harmful effects of vaccination.

Dr. S. B. Woodward spoke for his bill and presented testimonials showing endorsement by practically all prominent educators in the State and others. Dr. Benjamin White and Commissioner Eugene R. Kelley explained the methods used and nature of the virus as produced in Massachusetts.

Mr. Louis I. Dublin of the Metropolitan Life Insurance Company gave a most interesting address, showing the importance of vaccination. He proved to be a ready debater and turned the questions designed to confuse him to the discomfiture of the propounder.

In addition to the instructive addresses of the supporters of vaccination, it is encouraging to note the gradual wearing down of the opposition. If the testimony submitted at the hearing is given due weight by the committee, the report to the Legislature must be in favor of Dr. Woodward's bill. Even if this Legislature is not ready to take this advanced step, we can confidently predict that some future Legislature will enact the bill.

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Miscellany

BOSTON MEDICAL HISTORY CLUB

AT the meeting held January 17 at the Boston Medical Library, George Sarton, editor of *Isis,* prefaced his talk on "The Study of Medieval Science" with the statement that in writing the introduction to the "History of Science" on which he is now engaged, he had found it necessary to spend much time on the medieval aspect, both in order to get the heredity of his subject, and also because he found that he did not know enough of early science to fully understand Leonardo da Vinci, in whom he is especially interested. Vinci, who is a sort of miracle at the climax of the Renaissance, has many allusions to medieval science in his writings. Pierre Duhem, who has written a valuable book of studies on Vinci, devotes at least half of it to medieval science, which he traces back as far as possible. Sarton, on the contrary, has begun at the opposite end by making a study of medieval science in chronological sequence from its beginning. He is confident that when the whole field has been surveyed many obscurities will be cleared up. He has now reached the fourteenth century, and will eventually come to Vinci and will then find the place he naturally occupies. Taking up this work century by century is like making a map. Sarton uses the word knowledge in its broadest sense and feels that for comparison of one period with another one must know both equally well. He is chiefly concerned with positive or pure knowledge, the sciences, astrology, chemistry, mathematics, medicine, etc., grammar (very important for scientific study) and certain parts of philosophy. He then showed the results of his work in two charts, as yet unpublished. The first gives the number of great scholars working at any given period in various parts of the world, and on what subjects. Curves show the total number of scholars and scientists from 8 B.C. to 1300 A.D. The interesting fact shown, and one contrary to general belief, is that from the seventh to the eleventh centuries most scientific work was done in the East. The second chart shows the work divided into groups of languages, and here again further interesting facts appear: first, that in the seventh century, the darkest period of the Dark Ages, Greek and Latin writings were low, while Chinese and Hindu were highest; second, that from the eighth to the eleventh centuries all important works were in Arabic, the many Hebrew scholars also writing in Arabic. Therefore, for the study of this period of the Middle Ages, knowledge of Arabic is of the highest importance, for so much work has already been done on Latin manuscripts by Sudhoff and others that little new fundamental knowledge can be expected from these sources, whereas a great many Moslem manuscripts have not yet been studied at first hand, and Arabic writers are largely known through Latin translations. In mathematics, for instance, trigonometry was developed by the Arabic peoples appearing there in the ninth to eleventh centùries, while it did not reach the West until the fourteenth century, at Oxford. As regards geometry, the level of knowledge of that subject in the West in the eleventh century corresponded to that of the Greeks before Pythagoras.

The lecturer then discussed Thorndike's book on "Medieval Magic and Experimental Science," and while recognizing its learning and value, said that the main idea of it was wrong. In the study of experimental science it is not enough to simply mention experiments without further ado. One must determine what experiments could be made; what were made; whether good or bad; whether or not results could be or were obtained. One must remember that the medieval meaning of the word *experimenta* was simply *things tried*. It has not at all the connotation of *our* word *experiment*. Thorndike does not write from this standpoint and does not discriminate, for instance, giving Galen's remarkable work in making sections of the spinal cord, but a few lines, while describing less important matters at much greater length.

Magic and experimental science, according to Thorndike, help one another. This is wrong. The two exist together, but the history of experimental science is largely that of a struggle against magic. Science is a rational process, skeptical, progressive, limited; magic is irrational, dogmatic, unprogressive, unlimited. The aim of science is to discover the truths of nature, this discovery giving power but slowly; the aim of magic, on the other hand, is immediate power regardless of truth, consistency, or even of morality. The idea of the evolution of science through magic is wrong. At the beginning they were mixed, but by the Middle Ages they were separated.

Astrology and alchemy began as science and ended as magic. Astrology, based on the idea that one's destiny is influenced by the planets, was due to early observation of the regularity of motion in the stars and planets, together with observation of two commonplace natural phenomena, the tides (finally explained by Newton), and menstruation, both thought to be under lunar influence. These observations led to the further thought that the other planets might have similar influence. Thus astrology arose in a perfectly rational way, considering the knowledge of the time.

Now in the Middle Ages life was uncertain, governments were unstable, and the Byzantine chronicles, for example, give striking examples of dominating personality. This justified the old astrological belief that one's fate might be deduced from the position of the planets at the time of conception. Sarton observed in passing that modern work tends to the conclusion that at the time of conception, character, morality, and the main capacity of the organism are determined. At that moment the man is made and the fundamental things cannot be changed. To sum up, astrology and alchemy were *wrong* scientific ideas, but magic is nonsense. The ancestors of men of science were craftsmen who used their hands (not merely read books) in solving problems, with constant opportunity to compare their results. One may say that the work of the scientist is constantly checked up and compared, while that of the magician is unchecked.

Books on magic today are much as they were 2000 years ago. Every startling discovery (radioactivity, relativity) is at once followed by the publication of books which prove that the discovery is due to magic or connected with it. The list of such books is large and is published in *Isis* from time to time under the heading Superstition and Occultism.

Dr. William Pearce Coues read on "Some Medical Episodes in the Life of Catharine II of Russia (1729-1796). He sketched briefly Catharine's early life at Stettin as Princess of Anhalt-Zerbst and her unexpected invitation to St. Petersburg which ended in her marriage at the age of fourteen to the Grand Duke Peter, an imbecile. In more detail was given an account of her life at Court, where she was practically a prisoner in the palace, which was at times almost a madhouse, and where she lived surrounded by a group of selfish, unscrupulous and depraved persons.

All these circumstances undoubtedly had much to do with her later unrestrained manner of life. Her medical experiences were numerous and varied, and are to be found in her memoirs published by Hertzen in 1859, when they made a sensation by their frankness. Extracts were then read describing the extraction of a tooth (together with part of the maxilla), adolescent acne and its treatment, pneumonia with empyema and rupture into a bronchus, numerous miscarriages, unbelievable post-partum neglect with resulting phlebitis; later edema, ulceration of the legs and obesity. Her death was due to apoplexy at the age of 66.

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ANNUAL REPORT OF EXECUTIVE SECRETARY OF THE BOSTON TUBERCULOSIS-ASSOCIATION

At the annual meeting of the Boston Tuberculosis Association the Executive Secretary, Miss Bernice W. Billings, presented a report for the past year of which the following is an abstract.

The major activity of the Association during the year 1923 was the Prendergast Preventorium for Children, for the support of which the greater portion of the funds derived from the Christmas seal sale of 1922 has been devoted. Sixty-six little girls between the ages of six years and twelve, recommended by the outpatient departments of the hospitals in Boston, have been cared for. The treatment was without cost to themselves and they have been returned to their homes with a greatly increased stock of health. During the early part of the year the children continued their school work in the old voting-booth loaned to the Association by the City of Boston, but in the spring a one-room schoolhouse, open on three sides, was ready for occupancy. A teacher was furnished by the Boston School Department during the school season and a playground teacher was detailed to the camp during the summer. The personnel of the camp includes a camp matron, who is a nutrition worker, an assistant, a cook and a cook's helper, while the camp physician, Dr. Joseph Garland, visits the Preventorium each week.

The Association has to express its thanks to a goodly number of church societies, women's clubs and individuals, for much of the necessary sewing, and for many gifts that have conduced to the comfort or entertainment of the little girls, including outfitting and toys.

During the summer months, when the regular school exercises were suspended, the school room was used for an additional dormitory and afforded sleeping space for twelve children who were temporarily given the benefits of a summer camp.

In addition to its regular service in the prevention of consumption among children, the Preventorium has been of much use as an educational center, to which nurses, social service workers, and others interested in health work have come for information. Visitors from other States have been quite numerous, and representatives of distant countries have visited it for ideas and suggestions to use in their home countries. Physicians, health officers, nurses and social workers from Canada, the Philippines, Japan, Siam, Syria, France, Belgium and Poland have been among the visitors. One of the commendatory ideas expressed is that Prendergast is so simple in its construction and details that it will be practicable to copy it in other lands where permanent and costly structures are not practicable.

One of the plans which the Association has had in view the past year, and will probably fulfill when the funds warrant, is the construction of a wing for pre-tuberculous little boys, who have now no place in the City of Boston to which they may go for treatment.

During the year 1923 the Boston Tuberculosis Association added to its staff a social worker, Mrs. Anna M. Wright, for follow-up work and the placement in industry of arrested cases of consumption. In returning the children directly to the homes from which they came it has seemed essential for them to have supervision, to be secured by a follow-up undertaken in cooperation with nurses of the Boston Sanatorium, Out-Patient Department.

The second portion of Mrs. Wright's duties is made necessary by the fact that persons discharged from sanatoria have frequently no other means of support but returning to their old occupations, for which they are seldom quite ready. There is here necessary a matter of adjustment, for which there is at present no other agency in the field. This is another of the pioneer items which the Association is taking up for the purpose of demonstration.

In its educational and publicity work the Boston Tuberculosis Association has been active along a number of lines. In addition to its notes in the public press, it has constantly been in touch with newspapers printed in languages other than English, and has had a large number of stories on health topics for the readers of these papers.

The Boston Health Show gave an opportunity for much educational work, in which the different societies sank their individuality in cooperative efforts. The Journal has already published an account of the accomplishments of the Tuberculosis Committee at the Show (Boston Medical and Surgical Journal, Nov. 22, 1923). The Boston Tuberculosis Association financed the tuberculosis work, and furnished much of the personnel. The clinics were under the supervision of Dr. Sumner Remick and Dr. Cleaveland Floyd, with groups of physicians and nurses, the services of the whole staff being voluntary. Some 510 persons were examined; 26 were found to be tuberculous; 37, suspicious; 57 had chest or gland disease; and 99 had no tuberculosis, but were diagnosed for other diseases. The cost of the tuberculosis work was about $500, and the Association considers that the findings fully justify the expenditure.

For a portion of its educational work the Association has maintained an information service and lecture bureau. The former has from 50 to 75 calls a month, and the latter has arranged for more than 150 lectures. Three radio broadcasts have been given by physicians and a regular showing of the "Silent Health Lecture," slides without descriptive talk, every week to the waiting patients at Boston Dispensary. Plans are under way for the use of the Little Church on Wheels for street service, especially in the portions of the city occupied by foreigners. It is quite difficult to get these people into halls to listen to lectures, but they will almost always listen for a while to a speaker at the street corner.

A very important educational work which the Association has been able to develop during the past year has been the Modern Health Crusade. This is a well-tested means of emphasizing health principles to children during the impressionable age, and by pageantry and advancement through merit making it attractive. More than 11,000 children were enrolled during the year 1923 in the schools of Boston, and for the year 1924 a full-time worker has been named.

For the benefit of physicians the Association published three bulletins in manifold form. It conducted a Nurses' Institute early in the year, with an attendance of about 200, and with out-of-State speakers.

For a special minor service the Association set aside a small sum of money for car-fares for needy persons who must go again and again to the dispensary. This is paid out through the nurse or social worker, who is familiar with home conditions.

THE BOSTON TUBERCULOSIS ASSOCIATION AUXILIARY

At the meeting of the Boston Tuberculosis Association Auxiliary on the evening of February 6, the election of officers was in order, with reports and the reading of a number of papers. The election resulted in the following choice for the year 1924: President, Mrs. John D. Henry; vice-presidents, Miss Catherine MacLennan and Miss Elsie Friedman; secretary, Dr. John B. Hall; treasurer, Mrs. W. H. Rideing, and an executive committee of nine. Dr. George S. Hill, chairman of the Christmas seal sale committee, announced the receipts to date from the sale to be $40,500, against $26,000 last year. He attributed the increase in amount to a better understanding by the people of the work of the Association, and the use of the mail sale, which brings a letter quietly to your desk, avoiding the house-to-house canvass and the disturbing of the business man by the personal solicitor. Dr. Hill spoke to enlist the interest of the Auxiliary in the Schick test, the warfare on diphtheria being preventive work like that against tuberculosis, so that the members might well use their influence towards the education of the community.

Mrs. Anna M. Wright spoke with reference to the problems of placement for rehabilitated consumptives, and outlined the follow-up work that the Association is undertaking with reference to the children at Prendergast Preventorium. Mrs. Emma Grinnell Tunnicliff discussed the education of the deaf, in which the Copley Square Educational School is engaged, and emphasized the fact that the placement of her graduates in industries presents some of the same problems as the work with recovered consumptives.

The Auxiliary voted to hold regular meetings the first Wednesday evening each month.

ANNUAL MEETING OF THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH

This meeting was held January 23, 1924, in Boston. Mr. L. Dublin of the Metropolitan Life Insurance Company gave an address on tuberculosis entitled, "A Story of the Decrease of Tuberculosis During the Last Two Decades as Shown by Statistics of Large Insurance Companies." The following-named persons were elected as officers for the ensuing year:

President, Dr. George L. Tobey, Clinton.

First Vice-President, Dr. Francis P. Denny, Brookline.

Second Vice-President, Mr. John J. McGrath, Salem.

Treasurer, Dr. F. G. Curtis, Newton.

Secretary, Dr. W. H. Allen, Mansfield.

Executive Committee: James O. Jordan, Boston; J. U. Paquin, M.D., New Bedford; M. Victor Safford, M.D., Boston; C. E. Simpson, M.D., Lowell; Edward J. Teaham, Holyoke.

Legislative Committee: F. G. Curtis, M.D., Newton; W. G. Kirschbaum, New Bedford; J. J. McGrath, Salem; E. H. Trowbridge, M.D., Worcester; F. S. Dodson, Framingham; M. V. Safford, M.D., Boston; George E. Bolling, M.D., Brockton.

Committee to Confer with Massachusetts Department of Public Health: F. G. Curtis, M.D., Newton; F. X. Mahoney, M.D., Boston; F. L. Woods, M.D., Holyoke; Prof. J. O. Jordan, Boston; W. G. Kirschbaum, New Bedford; F. J. Ripley, M.D., Brockton.

Committee to Central Health Council: W. G. Kirschbaum, New Bedford; W. H. Allen, M.D., Mansfield.

Membership Committee: T. F. Kenney, M.D., Worcester; Russell Sprague, M.D., Yarmouthport; L. M. French, M.D., Pittsfield; F. H. Dunbar, M.D., Mansfield; L. A. Jones, M.D., Swampscott; E. J. Teaham, Holyoke; F. S. Dodson, Framingham; Paul Withington, M.D., Milton;

J. H. Drohan, M.D., Brockton; Miss M. C. Wiggin, Boston.

The following votes were passed:

First, To approve House Bill No. 414, which extends the present vaccination law to cover children in the private as well as those in the public schools.

Second, To oppose Senate Bills Nos. 120 and 121, which provide:—first, that no virus of human smallpox origin be made, sold, or distributed in the State; second, that unvaccinated children shall not be excluded from the public schools except temporarily at the time of a threatened or actual outbreak of smallpox.

W. H. Allen, *Secretary.*

MASSACHUSETTS PHYSIOTHERAPY ASSOCIATION

The Massachusetts Physiotherapy Association met on February 12 at 105 South Huntington Avenue, at 7.30 p.m. Speaker, Dr. Seaver. Subject, Scoliosis.

For the information of our readers the following explanation of this practice has been defined by the Association as follows:

Physiotherapy:—A coöperative movement toward better outlined standards and state recognition.

1. The object of the Massachusetts Physiotherapy Association is to establish and maintain standards of theoretical and practical training in physiotherapy.
2. It is proposed that schools of physiotherapy be established throughout the country with the coöperation of the medical profession. These schools to have adequate entrance requirements and definite standards of training and ethics.
3. The word "physiotherapy" signifies therapeutic measures practised on the human body. Natural physical forces such as air, light, water, heat, electricity, manipulation, and exercise are used.
4. All physiotherapy work is to be done by registered operators in accordance with or under the direction of registered physicians and surgeons.
5. It is also proposed that legislative enactment be passed which will bring all therapeutic measures not covered by any existing laws into their proper relation with the medical practices that are at this time governed by the Massachusetts State Board of Registration in Medicine, whereby Physiotherapy will be established as a branch of medical practices.

THE SPRINGFIELD HOSPITAL, SPRINGFIELD, MASSACHUSETTS

The following physicians and surgeons were appointed members of the medical staff of the Springfield Hospital at the annual meeting held January 16, 1924, for the year 1924:

President, Dr. Everett A. Bates.

Vice-President, Dr. Dudley Carleton.

Secretary, Dr. Richard S. Benner.

Consulting Physicians and Surgeons: Dr. George S. Stebbins, Dr. David Clark, Dr. Thomas G. Alcorn, Dr. George C. McClean, Dr. Luke Corcoran, Dr. George D. Weston, Dr. Wallace W. Broga, Dr. Walter H. Chapin, *Dr. Frederick E. Hopkins.

Visiting Physicians: Dr. Everett A. Bates, Dr. Theodore S. Bacon, Dr. Mortimer J. Stoddard, Dr. Laurence D. Chapin.

Surgeons: *Dr. Ralph H. Seelye, *Dr. Dudley Carleton, *Dr. Frederick B. Sweet.

Visiting Surgeons: Dr. Richard S. Benner, *Dr. John M. Birnie, *Dr. Ralph B. Ober, *Dr. Allen G. Rice.

Medical Assistants: Dr. Hervey L. Smith, Dr. J. Perry Graham, Dr. Henry Ritter, Dr. J. Eliot Overlander.

Surgical Assistants: Dr. Carl A. Schillander, *Dr. Frank K. Dutton, *Dr. John M. Gilchrist, *Dr. Frederick S. Hopkins.

Voluntary Assistants, Medical: Dr. Fred F. Dexter, Dr. Ernest H. Judd, Dr. Harry A. Downey, Dr. Harold F. Budington, Dr. Howard L. Jackson, Dr. Bernard Rabinovitz, *Dr. Charles Jurist, *Dr. Raymond R. Meunier, *Dr. George L. Steele.

Voluntary Assistants, Surgical: Dr. James A. Seaman, Dr. William A. R. Chapin, Dr. Salvatore Sannella, Dr. Roswell C. Mace, *Dr. Arthur F. G. Edgelow, *Dr. Frederic Hagler, *Dr. James Holmes.

Oculists: Dr. Ralph Carleton, Dr. George F. Dalton.

Surgeons for Diseases of Ear, Nose and Throat: Dr. William Goodell, Dr. George F. Dalton.

Voluntary Assistant Surgeon for Diseases of Ear, Nose and Throat: *Dr. Samuel Segal.

Obstetrician: Dr. Richard Benner.

Dermatologist and Neurologist: Dr. Philip Kilroy.

Orthopedic Surgeon: Dr. Dudley Carleton.

Visiting Orthopedic Surgeon: *Dr. Harry R. Wheet.

Roentgenologist: Dr. Harvey W. Van Allen.

Associate Roentgenologist: Dr. Ernest L. Davis.

Pathologist and Bacteriologist: Dr. Fred D. Jones.

Pediatrist: Dr. Alexander C. Eastman.

Assistant Pediatrist: Dr. W. Bradford Adams.

Cystoscopist: Dr. Ira N. Kilburn.

Assistant Cystoscopist: *Dr. James R. Seaman.

Consulting Dental Surgeon: Dr. J. Wesley Shaw.

Dental Surgeon: Dr. Ralph B. Edson.

Venereal Clinic: Chief, Dr. Edward C. Sullivan; Assistant, Dr. Jacob B. Tober.

The Trustees voted that on and after February 1, 1924, only surgeons of the Springfield Hospital shall have the right to operate, but that the present status of the men who practice internal medicine shall remain unchanged.

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*Promotions or new appointment.

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THE NINETIETH BIRTHDAY OF PRESIDENT EMERITUS CHARLES W. ELIOT

A COMMITTEE is being formed for the purpose of arranging a public tribute to Dr. Eliot on the occasion of his ninetieth birthday anniversary. Although Dr. Eliot is not a practitioner of medicine his interest in the profession and his great influence in developing medical education led to the granting of the M.D. degree to him, hence this celebration will be of interest to physicians.

For many years the annual exercises of the Massachusetts Medical Society were considered incomplete if Dr. Eliot was unable to attend. Probably few persons outside the active ranks of medicine know so many prominent practitioners and medical educators as Dr. Eliot.

This celebration will interest very many members of the medical profession as well as the large number of Harvard men throughout the world.

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DR. ELLIOT CARR CUTLER WILL GO TO WESTERN RESERVE UNIVERSITY

BY the removal of Dr. Cutler to Ohio, Boston will lose a surgeon who has made definite contributions to surgery.

He will be Professor of Surgery in the School of Medicine, Western Reserve University and House Surgeon of Lakeside Hospital at Cleveland. Dr. Cutler graduated from Harvard College in 1909 and from the Medical School in 1913 with high honors. He studied abroad, and in 1915 was placed in charge of the first Harvard Unit in Paris. He was promoted to rank of major and later placed in charge of Base Hospital No. 5. He was later given the distinguished service medal in recognition of work in connection with the Evacuation Hospital at Boulogne.

Dr. Cutler became instructor in surgery at the Harvard Medical School in 1919 and resident surgeon at the Peter Bent Brigham Hospital. He has served as associate in surgery and chairman of the department of surgery in the hospital and chairman of the laboratory of surgery in the Harvard Medical School. He is a Fellow of the American College of Surgeons. He has contributed to the columns of the BOSTON MEDICAL AND SURGICAL JOURNAL.

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DR. HENRY I. BOWDITCH read a paper, Feb. 14, setting forth his experiences with x-ray treatment of whooping cough before the Section of Pediatrics of the New York Academy of Medicine.

Obituary

WALTER ELA, M.D.

ACCIDENTAL gas poisoning caused the death on January 28, 1924, of Dr. Walter Ela, a well-known physician of Cambridge, at the Cambridge Hospital, of which he was one of the founders. The eldest son of Richard and Lucia Ela, he was born in Washington, D. C., September 23, 1848, his father ranking permanent official of the United States Treasury Department. Walter was educated at Exeter, at Harvard College, class of 1871, and at Harvard Medical School, where he took his degree in 1875. After serving as house officer at the Massachusetts General Hospital he visited Vienna, Paris, and London to continue his medical studies, and on returning to America settled in Cambridge, joining the state medical society and engaging in general practice. He was successively visiting physician and consulting physician to the Cambridge Hospital, wrote "Use of Elastic Ligatures in Fistulous Tracts," "Some Observations on the Treatment of Rectal Affections," "Case of Typhlenteritis," for the BOSTON MEDICAL AND SURGICAL JOURNAL in the years between 1879 and 1890. His interest in the JOURNAL and its progress was always keen. While in the Medical School Dr. Ela had gained the Boylston Prize in 1873 for an essay on "Fractures of the Elbow Joint," that was privately printed.

Among his memberships may be mentioned the Cambridge Society for Medical Improvement, the Massachusetts Medical Society, the Massachusetts Medical Benevolent Society, the New England Historic Genealogical Society, Boston Medical Library, Colonial Club, Friendship Lodge of Odd Fellows, Mount Olivet Lodge of Masons, Royal Arch Chapter, Cambridge Commandery, Knights Templars, and Aleppo Temple of Boston. He became treasurer of the Middlesex South District Medical Society April 25, 1888, and at one time was treasurer of the Harvard Medical Alumni Association and of the Standard Turning Works in Cambridgeport. Dr. Ela's name was placed on the retired list of the Massachusetts Medical Society in 1914, when he gave up practice. He is survived by his brother, Alfred Ela, the last representative of the main line of an old New England family, a man who has been very much interested in medicine and has made many investigations, especially into the history of obstetrics.

Dr. Ela married Hannah Styles Lyman of Montreal in 1887. She died September 11, 1918.

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ANNUAL DUES

There are a few members who have overlooked the bill for annual dues. If such do not recall having sent a check, perhaps the notice was lost or misplaced.

The Massachusetts Medical Society

CHANGES OF ADDRESS

THE Secretary will publish a list of membership changes from January 1 to March 1, soon after the latter date. Please send him any errors noted in the Directory of January 1, or any changes since that time. Address a postal card to Dr. W. L. Burrage, 182 Walnut Street, Brookline, Mass.

News Items

A CHIROPRACTOR CONVICTED.—On January 8, 1924, a chiropractor by the name of William Chase was in the Malden Court, charged with the practice of medicine without having been registered as a physician in this Commonwealth. He was found guilty, and fined $100 and paid the same. Mr. Chase comes from Wakefield.

WACHUSETT MEDICAL IMPROVEMENT SOCIETY.—A meeting was held at the Holden District Hospital Wednesday evening, February 6. Papers, Dr. M. M. Jordan, Differential Diagnosis of Common Mental Diseases; Dr. George A. Dix, Diagnosis of Primary Syphilis with Discussion of the Commoner Skin Diseases.

BERKSHIRE DISTRICT.—Dr. Choquette, of Adams, sailed the 12th of February for three months in France.

Fairview Hospital, in Great Barrington, contemplates the addition of a considerable extension to their hospital the coming spring.

Miss Ida J. Anstead, for the past 3 years superintendent of the House of Mercy Hospital in Pittsfield, has resigned.

SPECIALIST JOINS DARTMOUTH STAFF.—Dr. Arthur H. Ruggles, 1902, superintendent of the Butler Hospital at Providence, has been appointed consultant in mental hygiene at Dartmouth College. He will succeed the late Dr. Bancroft, and work in conjunction with the office of Personnel Director R. W. Husband.

Dr. Ruggles is a widely known American specialist in mental hygiene, rendered distinguished service to three allied governments during the war, and was awarded the croix de guerre, with bronze star.

WORCESTER DISTRICT.—The regular meeting of the Society was held at Memorial Hospital Wednesday, February 13. The business meeting began at 5.30 p.m. Lunch was served at 6 o'clock, and the regular program followed. 1. Dr. Kinnicutt, Report of Autopsy of Primary Cancer of the Liver. 2. Drs. Miller and Alton. Abscess of Lung—Report of Cases. 3. Dr. Sparrow, Report of a Case of Meningitis Simulating Parotitis. 4. Dr. Cook, X-Ray Diagnosis of an Anencephalic Monster.

LAWRENCE MEDICAL VETERANS' CLUB.—There was a meeting of the Lawrence Medical Veterans' Club on Thursday, January 31, at the Methuen Tavern, Methuen. An illustrated lecture, "Roentgen Ray in Diagnosis," was delivered by A. J. Leary, M.D. Harry H. Nevers, M.D., of Lawrence was elected President of the Club, and Joseph M. Scanlon, M.D., was reelected Secretary. Dr. Scanlon was presented a silver serving tray, suitably inscribed, by the Club members, the occasion being his recent marriage.

LAWRENCE MEDICAL CLUB.—The monthly meeting of the Club was held on Monday evening, January 28, with T. V. Uniac, M.D., at the Red Tavern, Methuen. J. F. Walch, M.D., was chairman for the evening, and Miss Elma Bliss, R.N., spoke on "Conditions in Russia from the Medical Point of View." After the business meeting the present situation whereby individuals presenting diplomas from medical schools which do not give a satisfactory training are allowed to appear before the Board of Registration in Medicine in Massachusetts was discussed, and the present law was severely criticized as not being in the interest of the good health of our citizens.

Correspondence

THE TAX UNDER HARRISON NARCOTIC ACT

February 2, 1924.

Dr. T. J. O'Brien,
Secretary, Joint Committee on State and National Legislation,
501 Beacon Street,
Boston, Mass.

Dear Doctor O'Brien:

I am informed that the Committee on Ways and Means of the House of Representatives has decided to act unfavorably on our appeal for relief from the occupation tax imposed on the physician under the Harrison Narcotic Act.

A tax is necessary if that act is to be valid. The amount originally fixed, however, one dollar a year, amply insured its validity. The excess of the present tax is a burden discriminating against the medical profession simply to swell the federal revenues.

No complaint was made when that burden was imposed; the Government needed the money. The Government, however, no longer needs it, and judging from published reports the Committee on Ways and Means is about to recommend slashes on tax rates generally, covering a wide field. There is no discoverable reason why the Committee should not recommend a reduction of this tax on the medical profession.

On the Committee named, are Hon. Allen T. Treadway, of Stockbridge, and Hon. Peter F. Tague, of Boston, Massachusetts. Will you not write to them about this matter, or have some responsible physician known to them and whose opinion they are likely to respect do so? It should be made clear that the medical profession knows that this excessive tax is unnecessary, regards it as unjustly discriminating against the physician, and is inclined to resent it.

Attention might be called, too, to the complaints of the profession relative to the ruling that requires it to pay income taxes on amounts expended for professional purposes, namely, for traveling expenses incldent to attendance on medical meetings and to postgraduate study.

I inclose a copy of a letter addressed to the Committee on Ways and Means, November 23, 1923, which shows the form in which the matter was presented to that Committee. I discussed the matter with Hon. William R. Green, Chairman of the Committee on Ways and Means, before that Committee acted, and was hopeful of a favorable reaction. I was somewhat disappointed, therefore, when a few days ago he told me of the present situation.

Immediate action will be necessary to insure results.

Yours truly,
WM. C. WOODWARD, *Executive Secretary,*
Bureau of Legal Medicine and Legislation, A. M. A.

A similar letter has been sent to the medical societies of the other States. Massachusetts should cooperate. The Committee on Legislation asks our members to write to the Hon. Allen T. Treadway and the Hon. Peter F. Tague, asking for their support.

AMERICAN MEDICAL ASSOCIATION

Council on Pharmacy and Chemistry

Mr. Editor:

In addition to the articles enumerated in our letter of December 29, 1923, the following have been accepted:

Abbott Laboratories.—Potassium Bismuth Tartrate—D. R. L. Ampules Potassium Bismuth Tartrate with Butyn—D. R. L., 0.1 gm. Ampules Potassium Bismuth Tartrate with Butyn—D. R. L., 0.2 gm.

Britt, Loeffler and Weil.—Loeflund's Malt Soup Stock (Dr. Keller's Formula).

Hynson, Westcott and Dunning.—Flumerin—H. W. and D.

Lederle Antitoxin Laboratories.—Corpus Luteum—Lederle. Corpus Luteum Extract—Lederle. Ovarian Residue—Lederle. 1 Per Cent. Silver Nitrate Solution—Lederle. Whole Ovary—Lederle.

Parke, Davis and Co.—Ergot Aseptic. Ampules Ergot Aseptic 1 Cc. Scarlet Red Sulphonate—P. D. and Co. Scarlet Red Emulsion, 4 per cent.—P. D. and Co. Scarlet Red Ointment, 5 per cent.—P. D. and Co. Scarlet Red Ointment, 10 per cent.—P. D. and Co.

Yours truly,
W. A. PUCKNER, *Secretary.*

RELATION OF ACCIDENT TO DISEASE

124 East 28th Street,
New York, December 18, 1923.

Mr. Editor:

The Medical Division of the New York State Department of Labor is preparing a series of bulletins showing the relation of accident to certain diseases.

These bulletins are issued under the direction of Bernard L. Shientag, Industrial Commissioner.

We will be glad to add to our mailing list the names of any surgeons in your city who would care to receive copies of the publications.

Very truly yours,
SARA MCPIKE, *Secretary.*

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NOTICES

THE BOSTON ORTHOPAEDIC CLUB

The Boston Orthopaedic Club will meet at the Harvard Club on the evening of February 18, at 8.15. Speaker: Dr. Albert H. Freiberg, of Cincinnati. Subject: The Orthopaedic Care of Crippled Children in Ohio.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS

Midwinter dinner and meeting at Boston Art Club, 251 Newbury Street, Boston, Friday, February 15, at 6.30 p.m. $2.50 a plate.

Speaker, Dr. Augustus A. Crane of Waterbury, Conn. Subject, "Industrial Hernia." Discussion opened by Dr. Frederic J. Cotton.

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE, PUBLIC HEALTH AND HOSPITALS, MARCH 3, 4, AND 5, 1924.

FLORENTINE ROOM, CONGRESS HOTEL, MICHIGAN AVENUE AND CONGRESS STREET, CHICAGO

PRELIMINARY PROGRAM

Monday, March 3, 1924

Morning Session—9.30 O'clock

Medical Education

Remarks by Chairman, Dr. Arthur Dean Bevan, Professor of Surgery, Rush Medical College, Chicago.

Report of the Secretary, Dr. N. P. Colwell, Secretary of the Council on Medical Education and Hospitals, Chicago.

Function of the University Medical School, Dr. Ernest D. Burton, President, University of Chicago.

Medical Education in America and Europe, 1909-1924, Mr. Abraham Flexner, Secretary of the General Education Board, New York City.

The Medical Curriculum, Dr. Harvey Cushing, Professor of Surgery, Harvard Medical School, Boston.

Clinical Specialties in the Undergraduate Medical School. Report of a Special Committee by the Chairman, Dr. George E. DeSchweinitz, Professor of Ophthalomology, University of Pennsylvania School of Medicine, Philadelphia. The other members of the committee are Dr. Ray Lyman Wilbur, President of the American Medical Association and of Stanford University, California; Dr. William S. Thayer, Professor of Medicine, Emeritus, Johns Hopkins University Medical Department, Baltimore; Dr. Walter R. Parker, Professor of Ophthalmology, University of Michigan Medical School, Detroit; Dr. Charles H. Frazier, Professor of Surgery, University of Pennsylvania School of Medicine, Philadelphia.

Afternoon Session—2 O'clock

Extension Medical and Dental Education

The Course in Preventive Medicine as Developed in the Medical Department of the University of Georgia, by the Assistant Dean, Dr. Eliot R. Clark, Augusta.

Medical Education and Culture, Dr. Stephen Rushmore, Dean, Tufts College Medical School, Boston.

A Symposium on Extension Graduate Medical Education for Physicians in Active Practice. (*a*) Certain Principles and Plans in University Extension Postgraduate Medical Instruction, Dr. George H. Meeker, Dean of the University of Pennsylvania Graduate School of Medicine, Philadelphia. (*b*) Experiences in Extension Medical Teaching of the University of North Carolina School of Medicine by the Dean, Dr. I. H. Manning, Chapel Hill. (*c*) Extension Medical Teaching for Graduates. Dr. Ethan Flagg Butler, of the Robert Packer Hospital, Sayre, Pa.

Relations between Medical and Dental Education, Dr. Henry L. Banzhaf, Dean, Marquette University School of Dentistry, Milwaukee.

Tuesday, March 4, 1924

Morning Session—9.30 O'clock

Medical Education and Licensure

Protection of the Public against Incompetent Doctors, Dr. Stanley H. Osborn, State Health Commissioner, Hartford, Conn.

Public Benefits from Recent Improvements in Medical Education, Dr. Henry S. Pritchett, President, Carnegie Foundation for the Advancement of Teaching, New York City.

Present Opportunities for Medical Study in the United States, Dr. Henry W. Briggs, Secretary, Medical Council of Delaware, Wilmington.

Inferior Medical Teaching Institutions, Dr. Charles E. Prior, Secretary, Massachusetts State Board of Registration in Medicine, Boston.

Afternoon Session—2 O'clock

Medical Licensure

Qualifications of the Medical Examiner, Dr. W. S. Leathers, Secretary, Mississippi State Board of Health, Jackson.

Regulation by Law of the Occupation of Healing Diseases of Human Beings, Harry Eugene Kelley of the Chicago Bar.

Immediately after the close of the Tuesday afternoon program the Federation of State Medical Boards will hold its business meeting, followed by its annual dinner in the evening.

Wednesday, March 5, 1924

Morning Session—9.30 O'clock

American Conference on Hospital Service
Hospital Efficiency

The Factors Which Indicate Professional Efficiency of the Hospital, Dr. Ernest A. Codman, Boston.

The Measures Which Indicate Efficiency in Hospital Administration, Dr. Malcolm T. MacEachern, Associate Director, American College of Surgeons, Chicago.

The Relationship of Autopsy Percentage to Hospital Professional Efficiency, Dr. L. Hektoen, Director, John McCormick Memorial Institute for Infectious Diseases and of the Annie Durand Hospital, Chicago.

Present Demand for Interns and Possible Use by Hospitals of Non-Medical Clinical Assistants and Laboratory Technicians. Mr. Homer E. Sanger of the Council on Medical Education and Hospitals.

Special Reports

Annual Report of the Hospital Library and Service Bureau of the American Conference on Hospital Service by Miss Donelda R. Hamlin, Director of the Library.

Afternoon Session—2 O'clock

Health and Public Instruction

Brief Report of the Work of the Bureau of Health and Public Instruction of the American Medical Association, Dr. John M. Dodson, Director of the Bureau.

Symposium on Periodic Examinations of the Apparently Healthy. (*a*) Out-patient Clinic or Periodic Health Examinations and Education of Medical Students for This Service, Dr. L. S. Schmitt, Acting Dean, University of California Medical School, San Francisco. (*b*) Education of the Public as to the Value of Health Examinations, Dr. B. L. Bryant, Secretary, Maine State Medical Society, Bangor. Discussion to be opened by Dr. Haven Emerson, New York City.

Organization and Experiences of the School of Hygiene at the University of Pennsylvania, by the Director, Dr. A. C. Abbott.

BOSTON MEDICAL HISTORY CLUB

Meeting at Boston Medical Library, Monday, February 18, 1924, at 8.15 p.m.

Medicine and Dr. Tobias G. Smollett, C. K. Drinker, M.D.; Extracts from Letters of a Connecticut Physician of 1800, W. H. Robey, M.D.; Witchcraft in the Light of Modern Knowledge, E. W. Taylor, M.D.

Light refreshments after the meeting.

JOHN W. CUMMIN, M.D., *Secretary.*

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The next meeting of the Middlesex East District Society will be held at the Harvard Club on Wednesday, February 20.

Dr. Russell F. Sullivan will speak on "Spinal Fusion in the Treatment of Vertebral Tuberculosis."

ALLAN R. CUNNINGHAM, *Secretary.*

MORRHUAE OLEUM

When babies are sickly, and fretful and glum
Sucking less at the bottle and more at the thumb,
With eyes that are baleful and backs that are bent,
And flesh that is flabby and not worth a cent;
With heads that are knobby and costals that bead,
Then sunlight, says Science, is all that they need—
But indigenous sunlight, eschewing our soil,
You can cure them, says Science, with cod liver oil.

Now if cried for by babies, and curing their ills,
And exceeding in power both powders and pills,
With strength that will straighten their backs and
their legs,
And set them all hopping on calcified pegs;
Extending its use as a sub for old Sol,
Let's use it for babies, for flowers and all—
So my house plants, which generally wither and spoil,
I now sprinkle daily with cod liver oil.

Its possible future one cannot foretell
With this likeness to sunlight (excluding the smell)—
My Gracious! Good Land! one is bound to exclaim,
Since they're really identical, barring the name,
The idea of canned sunlight, drawn out of the sea!
It's a fortune for someone, and why not for me?
For instance—photography—save all that toil,
And print all your pictures with cod liver oil.

JOG.

SOCIETY MEETINGS

DISTRICT SOCIETIES

Bristol South District Medical Society:
The annual meeting will be held in New Bedford, May 1, 1924.

Essex North:—Annual meeting at Lawrence General Hospital, May 7, 1924.

Essex South District Medical Society:
March 19, 1924:—Salem Hospital.
May 7, 1924:—Annual meeting, Relay House, Nahant, in conjunction with Lynn Medical Fraternity.

Franklin District:—Society meets at Greenfield the second Tuesday of March, May, July, September. Annual meeting in May.

Hampden District:—The meetings for the year are as follows:
April, 1924, at Springfield; annual meeting.

Hampshire District Medical Society:
Meetings held bi-monthly, the second Wednesday in the month, at Boyden's Restaurant, Northampton.

Middlesex South District Medical Society:
February 27, 1924:—Combined meeting with the Surgical Section of Suffolk District at the Boston Medical Library.
March, 1924:—Hospital meeting; place not yet determined.
April, 1924:—Annual meeting.

Norfolk South District:—Meetings first Thursday of each month at 11:30 a m., February, March, April and May, at United States Hotel, Boston. The February and May meetings are stated meetings.

Suffolk District Medical Society:
February 27, 1924:—Meeting of Surgical Section, in association with the Middlesex South District at the Boston Medical Library at 8:15 p. m.
March 26, 1924:—Meeting of the Medical Section, in association with the Boston Association for the Prevention and Relief of Heart Disease, at the Boston Medical Library at 8:15 p. m.
April 30, 1924:—Annual meeting to be held at the Boston Medical Library at 8:15 p. m.

Worcester District:—The meetings for the year are as follows:
March 13 at City Hospital, Worcester.
April 10—A public meeting.
May 8—Annual meeting.

STATE, INTERSTATE AND NATIONAL SOCIETIES

Schedule of meetings of the *New England Dermatological Society:*

Wednesday, April 9, 1924, at 3 p. m., in the Surgical Amphitheatre, Boston City Hospital.